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WILLARD N. CLUTE, Editor

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WHITE SNAKEROOT.—*Eupatorium urticaefolium.*

THE AMERICAN BOTANIST

VOL. XXXI. JANUARY, 1925. No. 1

I linger yet with nature for the night
Hath been to me a more familiar face
Than that of man; and in her starry shade
Of dim and solitary loveliness
I learned the language of another world.
Byron.

THE WHITE SNAKEROOT

By WILLARD N. CLUTE

LAST of its tribe to put forth its blossoms, and among the last of our autumn wildflowers, is the white snakeroot (*Eupatorium urticaefolium*). Although a member of the boneset family in good and regular standing, our plant is rarely called by a name that would indicate the relationship. Always it is white snakeroot.

Why this plant should be associated with snakes is hard to fathom. It has nothing in common with serpents unless its growth in dim and shady forests where, in the popular mind, snakes prefer to dwell can be regarded as such. Most of the snakeroots are found in similar places, but snakes, as a general thing, prefer more open country.

Although scarcely deserving the name of snakeroot, the plant is not without suspicion. Among stockmen it has a bad reputation because it often causes illness among cattle which feed upon it, and this mysterious malady may

be passed on to man through the milk and occasionally cause death. The mother of Lincoln is reputed to have died of this disease.

A curious thing about "trembles" or milk-sickness, as the disease is called, is that the plant seems poisonous only at times, or perhaps it is better to say, in certain places. It seems, therefore, that not the plant itself, but some ingredient in the soil may cause the trouble. In the region where this is written there are numerous spots fenced off from the cattle where the plant causes the disease, though the animals eat the plant elsewhere with impunity.

Of all our species of *Eupatorium*, this is perhaps the most frequently cultivated, in spite of its noxious reputation. It may be found listed in most nurserymen's catalogues under the name of *Eupatorium ageratoides*, a name by which the botanist knew it until recently when a change of name seemed more in style. It is an attractive plant, willing to grow in shade and when in bloom bearing numerous flat-topped clusters of pure white flowers. It shuns the open, but is at home in a creek or river floodplane in the shade of deciduous trees. Where the soil does not completely dry out in summer it takes the area to itself and spreads in great drifts of white which light up the underwoods as few other flowers do. Our frontispiece, from a photograph made in a maple forest near Joliet, illustrates how close-set the plants grow in congenial soil.

Among the white snakeroot's nearest relations is the tall Joe-Pye-weed whose purple flower-heads make attractive patches in low grounds about mid-July or later. In company with it grows another of its kin, the thoroughwort or boneset proper, the basis of an extremely bitter brew much favored by the herb-doctors of an early day and

still in use in out-of-the-way places though rarely esteemed by those obliged to drink it. In most localities, half a dozen other members of the family may be found and easily identified, for all have a general family likeness.

THE HIGH-BUSH CRANBERRY

By Mrs. Fannie M. Heath

THE opportunity to champion my pet hobby, the high-bush cranberry (*Viburnum opulus var Americanum*), gives me genuine pleasure. Were I to be limited to one shrub, I would certainly choose this. Nor would my choice be made from theory, either, for I have tried out more than a hundred species and varieties of shrubs and have eighty-five varieties growing in my home grounds at present.

I have set a very high standard for the cranberry, but it easily holds this place. It is easy to grow, makes rapid growth, bears pruning well, is almost as handsome as the snowball when in blossom, is troubled very little by insect pests, has a fall coloration that is wondrously beautiful, is a clean, neat-looking shrub in winter, and is very beautiful when in fruit, especially when the latter begins to ripen. Then, too, it is entirely hardy and its fruit makes beautiful jelly. Can anybody ask for more?

Thus far I have touched only upon the aesthetic side of the cranberry; now let us see what it will do in a commercial way. Our patch of this species contains thirty-six large clumps or bushes. From these we have just picked 420 pounds of berries, which run about a quart to

the pound, and sold them for ten cents a pound making a return of $42. The land contained in our patch is a trifle less than one-thirteenth of an acre, which would make the returns from a single acre $546. Deducting the cost of picking and marketing the crop, we have a profit of $390 an acre, which is as much as a North Dakota farmer can expect to make. There are few off years in the cranberry crop. In more than thirty years we have had but one crop failure (in 1900) when the young fruit which was just setting was frozen on the 8th of June.

Our patch received practically no attention except that necessary to gathering the fruit, as the ground is so shaded by the bushes that few weeds can grow beneath them. They are, however, much improved by a heavy mulching with old strawy manure every two or three years, and if the old branches are cut back, the crop will be heavier and the gathering of the fruit less tedious. In marketing the fruit we have found that by cutting the stem between the fruit cluster and the first pair of leaves the berries stand marketing much better.

As to the American form of the high-bush cranberry being devoid of bitter taste, this is undoubtedly a mistake. It has been reported that soil, climate, and rainfall have no effect on the quality of the fruit, but I know that back in southern Minnesota, in my girlhood home, where the cranberries grew wild, both on the rocky hillsides and sometimes down on the river banks, my mother always maintained that the fruit from the low, wet land was more acid and less bitter than that from the cliffs. And I also know that climatic conditions affect the quality of the fruit of both our cranberries and wild plums. In some years, the fruit from our wild plum patch is so bitter that

it is unfit for use while in years of abundant rain they make delicious preserves.

No one can fail to note the great variation in the quality of wild plums, and I see no reason why there should not be as great variation in the cranberries also. In fact, I know that they vary greatly in their degree of bitterness. For anyone to maintain that the fruit of the American high-bush cranberry is acid and not bitter seems to me to be another "blue dandelion" story.

WILD CRAB-APPLES

By NELL MCMURRAY

HAVING been familiar with wild crab-apples all my life, it seems strange to me that they are not known at all in some Eastern States. Last May a Massachusetts friend wrote "I do not know the crab-tree you speak of. It most certainly does not grow naturally here" and Thoreau in his essay on "Wild Apples" said, "Nevertheless our wild apple is wild only like myself, perchance, who belong not to the aboriginal race here, but have strayed into the woods from the cultivated stock. Wilder still, as I have said, there grows elsewhere in this country a native and aboriginal crab-apple, *Malus coronaria*, whose nature has not been modified by cultivation. I never saw the crab-apple until May, 1861. I had heard of it through Michaux, but more modern botanists, so far as I know, have not treated it as of any particular importance. Thus it was a half-fabulous tree to me. I contemplated a pilgrimage to the 'Glades,' a portion of Pennsylvania where it was said to grow to perfection. I thought of sending

to a nursery for it, but doubted if they had it, or would distinguish it from European varieties. At last I had occasion to go to Minnesota and on entering Michigan, I began to notice from the cars a tree with handsome rose-colored flowers. At first I thought it some variety of thorn but it was not long before the truth flashed on me, that this was my long-sought crab-apple. It was the prevailing shrub or tree to be seen from the cars at that season of the year—about the middle of May. But the cars never stopped before one, and so I was launched on the bosom of the Mississippi without having touched one, experiencing the fate of Tantalus. On arriving at St. Anthony's Falls, I was sorry to be told that I was too far north for the crab-apple. Nevertheless I succeeded in finding it about eight miles west of the falls; touched it and smelled it and secured a lingering corymb of flowers for my herbarium."

Joseph S. Illick in his book on Pennsylvania trees writes: "Peter Kalm, a pupil of Linnaeus who travelled in America in 1753, reported this species 'plentiful in Pennsylvania.' It is, however, not very abundant at the present time." The big trees are gone but Clearfield County is still a wild section and crab-trees are common here. Thicket after thicket may be seen only a few minutes walk from my home. Perhaps the little ones are overlooked for commonly only the older trees bear flowers. Like the thorn-apples, they are sociable shrubs and live in groups. A tree fifteen or eighteen feet high frequently grows in the field and surrounding it a dense mass of bushes from two to six feet high spring up.

The branches of a crab are not so straight as those of the thorn and it has more of a tendency to spread. An old crab-tree looks much like a stunted old apple-tree, but

there is no need of confusing a crab with a thorn-apple. Even in winter the thorns alone will separate them. A thorn-tree bears a smooth, shining, sharp thorn that pretends to be nothing else. The crab-apple cannot boast of such an organ. Its branches are beset with shoots an inch or two long that are half-twig and half-thorn; a stunted rough bit of a branch with a few leaves and ending in a sharp point. A multitude of these short shoots grow on every tree and make it an impenetrable mass.

When the leaves push beyond the winter bud-scales, there is a speck of bright red; very soon the foliage comes out and the tender leaves are partly green, but mostly russet. The flowers of the crab never have a bud to themselves, like the cherry and plum. Its blossoms are packed away with leaves in a winter bud—first a rosette of leaves spreads and then in the heart of the rosette the cluster of blossoms appear. From three to nine blossoms come together, while as many as fifteen have been counted in a bunch of thorn-apple. The small, tight, green flower-buds stand straight up and are conspicuous against the sky. After a few days of warmth, the eldest in each bunch shows a spot of bright red where the sepals are beginning to loosen. As the bud swells it becomes a deep rose-pink —like all roses; that is the time of its greatest beauty. It is the outer surface of the petals that is a deep pink color. The inner surface is paler, but with age the open flower does verge toward being pinkish white.

We read that crab-apples are used for preserves and jelly. No one here makes such use of them. Last year's crop is still on the ground under the tree where it dropped last fall. Even wild creatures seem to ignore the apples. They are indeed, worthless; too hard and sour for any use except to smell. Few things are so deliciously

fragrant. The little, green, greasy apples are as sweet-scented as the rosy flowers and I often drop one or two into my pocket beside my handkerchief when walking in autumn.

[In the Middle West, on the eastern borders of the prairies, the wild-crab is one of the handsomest of our native plants. For a time during the height of its season, no clouds of laurel on a New England hillside can compare with it, or better, with them, for we have no less than three species. The smaller fruits are often left ungathered, but all the others find their way to the kitchen and bring fragrance and flavor to the stores of the frugal housewife.—*Ed.*]

THE MEANING OF PLANT NAMES—XXII

SOLANACEAE

By WILLARD N. CLUTE

THE Solanaceae or Nightshade family is one that the budding taxonomist holds in high favor because, like the Ericaceae, its flowers are sufficiently large and distinct to make identification easy. The tropical species, especially, have showy and attractive flowers that make them desirable for decorative planting in spite of the fact that the family, as a whole, has an unenviable reputation for being poisonous.

Of the thirty-two species of Solanaceae found in Eastern America, nearly half, fourteen to be exact, are Old World species that have managed in one way or another to migrate to our shores. It is to be expected, therefore, that the majority of the genera and species should bear foreign names. The genus from which the family name

is derived is of course *Solanum*, but the derivation of this name is itself more or less of a puzzle. Gray says the derivation is unknown, but Britton hazards a guess that it is from *solamen* meaning "quieting" and Wood suggests that it is from *solum* the ground or soil. According to the "Century Dictionary", the generic name is the ancient name for the nightshade. This, indeed, is correct, but is far from explaining the meaning of *Solanum* or indicating the species of nightshade meant. If it can be shown that the word means "quieting" the family seems appropriately named, for there are many species in it capable of quieting the most obstreperous forever. Willis, however, says *Solanum* is from the Latin *solor* meaning "solace" or "comfort", in reference to the narcotic effects of some species. This seems reasonably correct.

One of the decidedly quieting members of this family is the genus *Atropa* containing the deadly nightshades. It is named for that one of the Fates who snipped the thread of human life after one sister had spun it and the third had measured it.

The genus *Datura* is another about whose name some uncertainty lingers. In this case, however, it concerns simply a matter of spelling. By most authorities the word is said to have been altered from *Tatorah*, the Arabic name of the original species, but Britton says it is from the Hindoo *dhatura*. As a matter of fact, both may be right and the names be but two forms of the same word.

Hyoscyamus is from the Greek for "hog" and "bean" because it is reputed to be poisonous to swine. One wonders why the hog should be singled out since the plant is poisonous to everything else. One version has it that hogs eat the plant with impunity, but this is a mistake. Doubt-

less the name is meant to suggest the truly noxious properties of the plants.

Still another poisonous genus is *Nicotiana*, familiar as the source of nicotine, the favorite poison of Young America. It was named for Dr. Jean Nicot who has the doubtful honor of introducing this brand of dope into Europe. The apple-of-Peru genus, *Nicandra*, is named for the Greek physician Nicander who flourished just before the Christian era, though Gray says it honors the poet Nicander of Colophon. *Chamaesaracha* commemorates, in a roundabout way, one Isidoro Saracha, a Spanish Benedictine. The first half of the name is Greek meaning "on the ground," that is, dwarf, while the rest is from *Saracha*, a South American genus, named for Isidoro, which our plants are thought to resemble.

The ground cherry or husk-tomato genus, *Physalis*, is from the Greek for "bladder" and alludes to the inflated calyx which surrounds the fruits in this genus. *Lycium*, the name of the matrimony vine genus, is from Lycia the native country of the first discovered species. The name, however, did not belong to this genus originally. It was first given to a species of *Rhamnus* and later transferred to the present genus by Linnaeus. Other familiar genera, not usually included in our manuals because they are exotic, are *Petunia* from *petun* the Indian word for tobacco, and *Capsicum* from the Greek *kappo* "to bite." Since this latter is the red-pepper genus the name seems appropriately bestowed. The tomato is often placed in the genus *Lycopersicum* meaning "wolf-peach". It is apparently a fanciful name of no significance though Bailey suggests that it may refer to the inferiority of this fruit compared to the true peach.

Notwithstanding the abundant opportunities for picturesque common names which the poisonous species of the Solanaceae afford, the names for the most part show little of either originality or invention, and since most of the species are exotic, there are few really American plant names in the group. The tobacco (*Nicotiana rustica*), for instance, is merely "wild tobacco", "real tobacco", "Syrian tobacco", and "Indian tobacco". The word tobacco itself is said to come from *tobaco* the Indian name for the pipe in which the weed was smoked though some would derive it from a Venezuelian province, Tobaco, or even from the Island of Tobago, one of the Windward group. Nor must we overlook that common name made from the scientific and applied to several ornamental species as "nicotina".

As common and wide-spread as is the matrimony vine (*Lycium halimifolium*), it is surprising to discover that nobody seems to know much about the origin of the common name. The old name of "box thorn" is of course derived from the leaves which resemble the box (*Buxus*), and the thorny branches. "False Jessamine" alludes to the resemblance of our plant to *Gelsemium sempervirens*, while "Jackson-vine" is clearly a misnomer due to a confusion of our plant with *Smilax lanceolata*.

The "Apple-of-Peru" (*Nicandra physaloides*) appears to have been named from the resemblance of the fruit of this plant to the apple and the fact that its original home is in Peru. The name has in some cases been transferred to the plant which is more commonly known as the "jimson-weed" (*Datura stramonium*). This latter plant is usually called "thorn-apple" in Europe in allusion to its thorny seed-capsule, but here we call the fruit of the hawthorn "thorn-apples" and dub the present species "Jamestown-weed" or corrupt it to "jimson-weed". The "James-

town" part of the name comes from the fact that some of the early Virginia colonists tried to eat the plant or its fruits with very surprising results. The trumpet-shaped white flowers make it occasionally called "Jamestown lily." The fruit is undoubtedly poisonous and to this fact such names as "devil's apple", "mad apple", and "devil's trumpet" are due. The large lily-like flowers of all the species make the names of "trumpet" or "trumpet-flower" quite appropriate. In one cultivated species, as befits a plant admitted into the garden, the name becomes "angel's trumpet." "Dewtry" is simply a mispronunciation of *Datura* and fire-weed is apparently of no significance. Occasionally a form of this species with purplish flowers and leaves is regarded as a separate species and called *Datura tatula*. It is then known as "purple thorn-apple". Both species are known as "stink-weed" on account of the disagreeable odor of the leaves.

When our common tomato was grown in the flower-garden as an ornamental plant, it received the name of "love-apple" under the impression that it had some effect on the affections, but now that its fruit comes to us in tin cans, this name is fast fading from memory. "Cherry tomato" is the name given to a small-fruited form which is probably much like the undomesticated plant. The name of "Jew's ear" is a puzzle to the writer who doubts if the plant was ever really called so. Perhaps, like the fruit of the egg-plant, it was originally "Jew's-apple".

The "husk-tomato" is always some species of *Physalis*. In addition to this name, most species are known as "ground-cherries". In both cases the reference is to the small round fruits which are cherry-like only in size and color. *Physalis Alkenkengi* is the "Chinese lantern plant" and "Strawberry tomato". The first name is due to the

gaily colored calyx at maturity and the second refers to the fruit, though this is in no way like a strawberry. This latter name, however, is in vogue for *P. Ixocarpa, P. Pruinosa,* and *P. Pubescens. Physalis ixocarpa* is also "Mexican ground cherry" and "tomatillo" the latter meaning "little tomato". *Physalis Alkenkengi* is also "bladder-herb" from the inflated calyx and since the fruits last well into December it thus becomes "winter cherry", while *P. Virginiana* is by mistake called "wild cherry". *Physalis pubescens* is sometimes known as "Cape gooseberry", which name is shared with several species that resemble it; they do not come from the Cape of Good Hope, the region meant when the word Cape is used in plant names.

Physalis viscosa is known as "yellow henbane" but the best known henbane is the "black henbane" (*Hyoscyamus niger*). The word "henbane" seems to have been originally "henbell", but it is now always "henbane", and the fiction that it is especially poisonous to fowls has been invented to account for it. The dictionaries say that hogs are not poisoned by the plant, though the botanists may be quoted to the contrary. In any case the plant is poisonous to other forms of animal life as its name of "insane-root" and "poison tobacco" indicate. "Hog's bean" is simply a translation of the generic name though the fruit is not beanlike. We are at a loss to explain either "belene" or "chenile" applied to this plant unless these are further attempts of the unlettered to pronounce such a word as henbane. "Fetid nightshade" and "stinking nightshade" allude to the disagreeable odor of the entire plant.

The really deadly nightshade is *Atropa belladonna;* in fact, this is one of the most deadly of plants. It is constantly used in medicine but it is not to be trifled with as a long list of other names show. Among these are "sleeping

nightshade", "death-herb", "banewort", "daft-berry" "dway-berry", and "dwale". This last word, it may be said, is an ancient term meaning stupor and is allied to our modern word "dull". It is well applied to this species. The plant is sometimes called "poison black cherry" and "great morel", the latter appearing to have been derived from the Italian *morello* meaning dark-colored and thus probably connected with Moor and mulberry.

Atropa is also called "black nightshade" owing to the color of its fruit, but our best-known plant of this name is *Solanum nigrum*, which, if specific names mean anything, is properly entitled to bear it. This is also the "garden nightshade" and "common nightshade" but "deadly nightshade" sometimes applied to it seems to have slipped over to it from its more poisonous relative. The ripe fruit of our plant is not poisonous; on the contrary it is made into pies and sauces in the territory adjacent to the Mississippi river, as its civilized name of "garden huckleberry" suggests. This plant is one of the parents of Burbank's much advertised "wonderberry". The small black berries have won for the plant such common names as "morelle", "morel", and "pettymorel" whose meaning has been explained in a preceding paragraph. The name of "duscle" applied to this species we fail to find in any dictionary.

Another common species of nightshade is a woody vine known as "tether devil", "woody nightshade", "climbing nightshade", and "bitter nightshade" (*Solanum dulcamara*). The plant is familiarly known as "bittersweet", a fact which the specific name emphasizes, but it is not to be confused with that other species of the same name (*Celastrus scandens*) whose orange capsules are so much used for winter decorations. The present species is called "bittersweet"

because the berries are first bitter and then sweet to the taste—or the reverse; it is a long time since we tasted them and then the experiment was cut short by a call from the doctor. The plant is regarded as medicinal as the name "fever-twig" indicates. Such names as "poison-berry", "poison-flower", "wolf-berry", and "snake-berry" allude to the poisonous properties of the plant, while the blue flowers and bright red berries account for such names as "blue bindweed", "violet bloom", and "scarlet-berry". "Felon-wort" and "fellen" do not seem of any special significance in connection with this plant. The name of "dogwood" sometimes given it and "hound's-berry" given to *S. nigrum* probably refer to the reputed worthless character of the fruits. Our plant is also called "dwale" and "morel" but the latter name belongs, by rights, to a black-fruited species.

Solanum triflorum is the "cut-leaved nightshade" and "wild potato", the last name from the resemblance of the plant to the common potato. *Solanum rostratum* is the "prickly nightshade", "beaked nightshade" and "yellow nightshade", the latter from the color of the flowers. The plant is most commonly known as "buffalo-bur" but its prickly fruits have earned it several other names among them "sandbur", "Texas nettle", and "prickly potato". Another prickly species is *S. Carolinense*, which is well known as "horse nettle", "bull nettle", "sand brier", "thorn-apple" and "tread softly". Those who know the plant will agree that it is well entitled to any of these names. The terms "horse" and "bull" in the foregoing combinations, of course refer to the size of the plants in comparison with the true nettles. The name "apple-of-Sodom" is a misnomer from the Old World and "radical weed" needs further elucidation. The "white horse-nettle" (*S. Eleagnifolium*)

is more poetically known as "silver-leaved nightshade" while "purple nightshade" refers to the flowers.

In the midst of this poisonous and prickly family come two of our most highly prized edible plants, the "egg-plant" or "aubergine" (*S. esculentum*) and the "potato" (*S. tuberosum*). The names applied to *S. esculentum* all refer to the fruit, "Aubergine" being derived from *auberge*, a kind of peach. Among other names for this species are "Guinea squash", "Jew's apple", "garden egg", and "brinjal". The latter is the East Indian name. "Egg-apple" seems somewhat tautological, while "mad-apple" is evidently a mis-application. The potato is too well known to have many common names. It is called "white potato" to distinguish it from the yellow sweet potato, but the name usually applied to it is "Irish potato". This was given, not as many suppose, because the plant thrives remarkably in Ireland, but because a plentiful supply of potatoes once saved the Irish in a time of famine. The word "potato" is from *batatas*, said to be the native name of the sweet potato, but it appears that neither the common potato nor the sweet potato was the species Raleigh carried back to England. It is more likely that his potatoes were the tubers of the ground-nut (*Apios tuberosa*).

FAVORITE FLOWERS

ANYBODY who comes into our garden and sees the anthemis, calliopsis, coreopsis, gaillardia, French marigolds, African marigolds and sunflowers, knows that a flower needs only to be yellow to find favor with the gardener, though she was unconscious of the fact when the seeds were sown. Perhaps she is only imitating nature

who all the summer through has patches of yellow somewhere. Early in spring, myriads of dandelions appear. If they were not such common tramps, the gaudy buttons would be much admired. Then come the marsh marigolds that choose to live in a brook in the backwoods where mortals seldom see them. Cinquefoil is not showy, but a great stretch of the trailing vines with their small roses is a thing of beauty. The field hawkweed (*Hieracium pratense*) is getting a strong foothold in this section—it has even stepped into a neighbor's yard. Looking up the hill against a mass of its long stems with bright tassels on the top (the tassels go to sleep at night), one sees a pretty picture. Occasionally one sees its less aggressive relation, *Hieracium venosum*, with its rosette of purple-veined leaves. The common loosestrife makes bright patches by the riverside but the plainer four-leaved variety on the hillside is more pleasing. The latter more than makes up in form what it lacks in color. It seems strange that only one insect cares for loosestrife pollen, at least the small bee, *Macropis ciliata*, is the flower's only visitor in this locality. Occasionally a brown or withered plant tells that another insect, a boring larva, *Papaipema lysimachiae*, dwells within. It is a satisfaction to live in a land too rough and rocky for extensive farming; where brown-eyed Susans may take possession of a whole hill. The goldenrods, too, are allowed to spread undisturbed, year after year. Late in October, after all the leaves have fallen, there is a last show of yellow on the witch-hazel bushes.—*Nell McMurray, Clearfield, Pa.*

As to the favorite wildflower, mine is *Claytonia Caroliniana*. It typifies all that is delicate, fragrant, and young, so I love it. It is the soul's flower.—*Nancy Darling, Woodstock, Vt.*

I am compelled to give my vote to *Hepatica acutiloba* as the favorite wildflower, as it possesses more points of merit than any other flower I know. In many sections of the country it is the very first to greet us in early spring. Its prettily mottled evergreen foliage is so handsome that the plant is well worth growing for this alone. It is delightfully fragrant and easy to domesticate and may be transplanted at any time of the year. It also comes in more shades and colors than any other wildflower with which I am acquainted, thus lending itself to many of our pet color-schemes. Besides all this it possesses the wonderful quality of "staying put." One may leave it uncared for, for years and years and come back and find it just as he left it. The only change is that the clumps have grown larger. For this reason it makes an ideal edging plant for the fern-bed or for any other moist, shaded location. I have two such edgings, one in the varying shades of blue and the other in all shades of blue and pink. I have one plant that for experimental purposes has been undivided and undisturbed for twenty years and this last spring it gave one hundred and four blossoms.—*Mrs. F. M. Heath, Grand Forks, N. Dakota.*

One of the handsomest and most interesting flowers of this or any other region grows almost unnoticed in nearly every sandy field and fence-corner in the Southern States. A slender, melon-like plant with dark-green, three-lobed leaves spreads over the red and sunburned soil, and like the dandelion attracts little attention by reason of its very commonness, though possessing within its flower-buds that which was once the marvel of the civilized world.

When the sepals finally relax, there appears a magnificent purple-blue flower whose radiating perianth of ten

divisions is crowned by a remarkable circle of slender purple filaments. It is a common weed but those who call it so have failed to note it with proper attention. This is the passion-flower in which the superstitious voyageurs and explorers of the early days fancied they could discern all the objects of the crucifixion. So remarkable did the flower appear to Monardes, the Spanish botanist who discovered it, that he was reluctant to introduce a description into his books for fear he would not be believed.

The three carpels rising from the center of the flower appeared to these pious observers to represent the beams of the cross, while the three stigmas represented the three nails. The delicate corona typified the crown of thorns and the five sepals and five petals were taken to represent ten of the Apostles, Peter who denied our Lord, and Judas who betrayed Him, being excluded. The purple blossom is the purple robe, the three-lobed leaves suggest the Trinity, and the tendrils simulate the cords with which He was bound.

To the discerning eye, the flower is most attractive, though those who gaze upon it nowadays doubtless fail to note its religious significance. Indeed, in these degenerate days, it is difficult to see any of the resemblances which the ancients found so distinct. Our interest, however, does not end with the flower. When these evanescent structures have fallen, there follow round, green, melon-like fruits which at maturity are somewhat larger than a hen's egg and are known to country children as May-pops. These ripen into edible fruits with a strong and, to most people, pleasing fragrance. No other plant with which I am acquainted is so strongly or pleasingly scented. In appearance it is something like the fruit of our mandrake or May-apple and suggests that plant, to some extent, in flavor.—*Editor.*

THE FISHERMAN'S WILDFLOWERS

THE shad-bush, or June-berry, blooms in early April and ripens its fruits in June. Its soft, white banner of blossoms has always been the signal for the shad fisherman to get out his seine. It is also a notice to the trout fisherman that winter is past and the trout will soon be rising to capture his dancing flies. It is a bush or small tree that loves the water, and in June this same angler for trout may stand knee-deep in the mountain streams and rake great handfuls of ripe red June-berries from the laden branches that almost touch the water. It is likely that he has been made aware of the presence of the shad-bush by the wiry notes of a small flock of cedar-birds that have been gorging themselves on the luscious fruit. It falls to the lot of few trees or shrubs or plants to be of such service to the fisherman as the shad-bush is with its white blossoms and its dark red fruit.

Late in April or early May the trout fisherman on the way to the stream is likely to see, close to the road or path, another bush whose white blossoms he has learned to know. It is the hobble-bush, appropriately named, he thinks, when he has tripped over its drooping branches which have taken a second root in the soil. Its flowers grow in flat clusters with the more perfect blossoms in the outer margin. Whether or not these clusters of brilliant white blossoms have any fragrance is always a question with the angler, but the fact that they are sought by the lordly *Turnus*, the big yellow and black butterfly, may be taken as some proof that they are.

If the anglers of trout streams were required to make a choice of some particular flower as their emblem, it is

highly probable that they would elect one of the trilliums. These belong so completely to the wild places, they come so close to the stream, they bloom throughout so much of the best part of the trout fishing season, and they are so striking and attractive that the youngest and dullest fisherman is forced to take notice of them. Where I usually left the road above the stream to clamber down the hillside to my first pool, I always stopped to look at the purple trilliums. I was seldom disappointed, though it was in the middle of April. The bank sloped to the south and on its warm sunny face the plants flourished and put forth three dark red or purple petals so early in the season that wake robin seemed a fitting name for them. Two weeks later I would find the beautiful delicate painted trillium on a low bank a few rods further down the stream. But before I could find the white star with its pink-lined center some search must be made among the underbrush and beneath the low hemlocks.

For a good many years the great white trillium eluded me. Then, one day in May, while fishing a piece of water some miles north of my accustomed grounds, I came upon it. When I had climbed a bank and was starting across a bottom on an old abandoned logging railroad, a large white flower appeared a few rods away. Then another and another was seen and finally I realized that the whole bottom was starred with them. The season for them was well on, and some of the more mature flowers were beginning their pink stage, but there were enough perfect blossoms to make me fully acquainted with the beauty of this wonderful wildflower. Since then I have seen other creek-bottoms dotted with these big white flowers and the sight has never failed to recall my first meeting with them.

Several years ago, I spent three beautiful June days and two cool nights deep in the mountains of northern Pennsylvania. It was a section from which the pine and hemlock had been removed years before, but it was still well covered with chestnut and oak. On breaking camp, our party decided to return by way of a little-travelled road which ran for miles along the top of the mountains. The wild honeysuckle was in the pink of perfection and bush after bush was passed that was a complete mass of color. Soon after reaching high ground, we came into a little forest of medium-sized trees. There was little underbrush and one could look through the forest on all sides for some little distance. At once the moccasin flower was noticed. Every rod of the ground, except where the road ran, was decorated with from three to a dozen of the big showy flowers. The moccasin flower as well as its smaller and less showy sisters, the yellow lady-slippers, is now and then seen by the angler growing in nooks near the laurel and the fern where the droning bee may feed on and fertilize it.—*From an article by Charles Lose in Forest Leaves.*

SOME TROPICAL VINES

By Mrs. W. D. Diddell

VINES, or climbing plants, form a very prominent feature of the tropical landscape and, indeed, I think they must have originated in the Tropics. In those hot lands where the doctrine of the survival of the fittest is so thoroughly exemplified, where every plant must struggle, not only to obtain a foothold, but having secured it must struggle upward toward the light, then the slender,

weaker plant, struggling upward, caught hold of its stronger, sturdier neighbor and clung to it for support.

There is a large class of climbers in the Amazon Valley of South America, called lianas. These climb by means of aerial rootlets that frequently graduate into full-sized roots growing out of the joints and wrapping themselves around the stem of the host tree. They belong mostly to the Arum family. All have thick, fleshy, jointed stems and there is a variety of leaf forms. One of these, the ceriman (*Monstera deliciosa*) has a huge stem, enormous heart-shaped leaves, curiously cut, and delicious edible fruit. They grow well in South Florida and I have seen them used as greenhouse plants in the young stage with only one or two leaves and a mass of rootlets growing out of the back of the stem, hunting in all directions for a foothold.

Another of these lianas is *Pothos aurea* with shining leaves beautifully blotched with yellow, hence its name, "golden pothos". Its leaves are smooth and perfectly heart-shaped though most of the class that I have seen have the leaves variously notched and lobed. *Cereus triangularis*, a true climbing cactus native to the lower Florida keys, climbs in the same manner. The spiny joints are three-sided and the blossoms, pure white and eight or ten inches across when fully expanded, are very fragrant. A huge live oak, with its wide-spreading limbs covered with the *Cereus* as far as the eye can see up into the tree is a sight worth seeing, especially on a moonlit summer night when the flowers are open. The flowers begin to open at dusk and continue to expand until nearly midnight but by morning they close forever.

Some people are familiar with the *Bougainvillea* which is such a feature of California and Florida gardens. The

flowers come in threes, each cluster subtended by a large, mostly purple, bract though in some varieties this is really red. The real flowers are inconspicuous, being tubular and yellowish and it is the bracts that make the plant gorgeous. They will climb on trees, fences, pergolas, porches or anywhere they can get a foothold. They grow very rapidly and are always in bloom though the flowers are most abundant in winter. By judicious pruning the plant may be made to take a shrublike form. It is an excellent pot plant as it blooms when very small. I have in a 4-inch pot at this writing a plant rooted from a cutting brought back from South Florida last summer, that is covered with bloom.

A worthy rival of the *Bougainvillea* is the flame vine (*Pyrostigia venusta*). This beautiful Brazilian vine, climbing eighty feet or more and covered with its gorgeous tubular flame-colored flowers is a never-to-be-forgotten sight. It is a great favorite in Southern Florida. It is beautiful any and everywhere, unlike the *Bougainvillea* which does not harmonize with certain shades of red. Allowing the latter to climb over a pink or purple crepe myrtle is a positive crime.

The *Clerodendron* from Africa used as a porch vine, blossoms profusely during the summer with bright red flowers growing out of a baglike calyx of pure white. The flowers last a long time and against the dark green leaves are very attractive.

The *Solanums* are well represented among the climbers. They have compound leaves and blue and white flowers. *Solanum Seaforthianum* from the West Indies has delicate blue flowers and scarlet fruits. *Solanum Wendlandi* is an exceptionally vigorous vine much used to cover porches in

South Florida. It has large trusses of flowers resembling glorified potato-blossoms, except that they are deep blue and borne in profusion. Another blue-flowered vine is *Thunbergia grandiflora.* It is a rapid grower with long pointed leaves and sky-blue flowers three inches across. The common name is sky flower.

One of the most magnificent sights I have ever seen is *Beaumontia grandiflora* from India, a heavy-growing, woody vine with dense foliage and clusters of huge trumpet-shaped white flowers, like Easter lilies, and like them blooming in the spring. The *Allamanda* is also a very heavy grower with beautiful golden bell-shaped flowers from three to five inches across and long narrow light-green leaves.

FLOWERS OUT OF SEASON.—When anything threatens the life of a plant, it has a tendency to cause it to bloom. Trees defoliated by insects, or injured by summer storms are likely to put forth new blossoms in autumn. The florist knows that to allow his geraniums to become pot-bound with their roots crowded in small pots likewise results in a profusion of bloom. When a hot dry summer is followed by a cool wet fall, the wild flowers are often beguiled to put forth their blossoms again. There is scarcely a plant which blooms in early spring that has not been recorded as occasionally blossoming in autumn. One can find violets almost any October and even such a conservative plant as the trailing arbutus has been known to flower thus. A new instance of this kind occurred in Joliet, last November, when a plant of the Japanese quince (*Cydonia Japonica*) put forth a dozen or more blossoms long after the leaves had fallen.

NOTE *and* COMMENT

CONFEDERATE JESSAMINE.—A correspondent asks for an explanation of the name "Confederate jessamine" applied to the plant which we more commonly know as star jessamine (*Trachelospermum jasminoides*). The plant is a native of southern China but is extensively cultivated for ornament in our Southern States. It is also known as "Malayan jessamine" and "African Jessamine" but nobody seems to have any information in regard to the name first mentioned. If anybody can throw further light on the matter, we would appreciate it.

FOREST LANDS.—We hear a great deal about the depletion of our forests but get very little exact information on the subject. According to a recent bulletin from the Government the original forests of the United States covered approximately 822 million acres. Only a very small part of this forest remains and most of what is left is in the South and on the Pacific Slope. Some of the cut-over lands are being allowed to grow up to second-growth timber but there is much land that has been entirely denuded and which at present produces no valuable crop. In the Northeastern States the denuded lands consist of more than 12 million acres; in the Lake States of 19 million acres; in the Central and Southern hardwood region, nearly 100 million acres, in the Southern pine belt, 30 million acres; and in the Mountain and Pacific States about 45 million acres. At present the remaining soft-wood timber is disappearing eight and a half times as fast as it is being re-

placed by growth, and the hardwoods are disappearing three and a half times as fast as new wood is being formed. In many sections depopulation has followed the disappearance of the woodlands, especially in regions dependent on wood using industries. In New England, for instance, the area of improved farm-land is only about half of what it was at the time of our Civil War. One noticeable fact about further timber depletion is that fire, insects, and disease take about one-seventh as much wood as is used in industry.

WHITE STRAWBERRIES.—Is a wild white strawberry a great rarity? We used to know a patch by the roadside where they grew year after year. A few were often gathered to scatter over a dish of red ones to please the eye; they were tasteless. They were somewhat novel but we never thought much about them and it was rather a surprise to read recently in *Good Housekeeping* of Mrs. Porter's experience in growing them and she writes: "They must be extremely rare because in all the years during which I have spent much time on my knees in the woods of Ohio, Illinois, Indiana, and Michigan, I never have found wild white strawberries for myself."—*Nell McMurray.* [One should not put too much confidence in the tales of popular writers. They write to entertain rather than to instruct and often build up an astonishing superstructure on a foundation of fact. As our correspondent surmises, white strawberries, though not common, are nevertheless not great rarities. There are first of all, the albino forms of otherwise red fruited plants which we are warranted in expecting from time to time and in addition there are two named forms which seem to have a habitation as well as a name. In Wood's "Botanist and Florist", published about 1870, he mentions a variety *pallida* of *Fragaria vesca* and reports it well estab-

lished in Wayne County, New York. This form is also mentioned without name in Bailey's new "Manual of Cultivated Plants". "Gray's Manual", seventh edition, calls the plant variety *alba* while James A. Graves, reporting the form to Clute's "Flora of the Upper Susquehanna" makes it a variety of *Fragaria Americana* which he calls *alba*. He further describes it as "leaves thicker and shining." The writer has seen the colony in northeastern Pennsylvania from whence Graves' plants came.—*Ed.*]

SLENDER CLIFF-BRAKE.—The slender cliff-brake (*Pellaea gracilis* or *Cryptogramme Stelleri*, whichever you choose), is a northern species that here and there pushes south into our northern tier of States. It has been found in Northern Illinois, in Iowa, and in the mountains of Pennsylvania. The plant is a lover of limestone and is seldom found on any other kind of rock. The writer of this paragraph found it north of Binghamton, N. Y., in a limy layer in shale rock and the plant has recently been found at Watkins' Glen, some 80 miles west of Binghamton, in similar surroundings, by Mrs. Anna Fernald. The latter station is probably a re-discovery of an ancient locality for it, as Dr. W. R. Maxon writes us that there is a specimen in the National Herbarium from Watkins collected many years ago by P. A. Puissant and received by the Herbarium in 1901 from the the herbarium of A. B. Langlois.

BITTERSWEET "BERRIES."—A writer in one of the popular magazines refers several times to bittersweet "berries." There is, to be sure, a plant called bittersweet that produces real berries, but the plant discussed, the bittersweet used for indoor decorations (*Celastrus scandens*), is not that one. The fruit of *Celastrus* is an orange-red capsule which opens at maturity revealing the scarlet arils which enclose the seeds. The aril is seldom recognized in fruits.

Mace, however, is an aril and surrounds the nutmeg seed much as the bittersweet aril surrounds its seed. A similar structure forms the edible portion of the lichi or Chinese nut. Some even regard the downy sail of the milkweed seed as in the nature of an aril.

AN ALBINO CALLICARPA.—The fruits of *Callicarpa Americana* of our Southern States is of such a peculiar shade of violet purple that it is frequently known by the name of beauty-fruit. Albinos, however, may occur in the genus and this fact is emphasized by specimens with pure white fruits sent by Mr. H. A. Rankin. These are from a plant which he discovered several years ago not far from Hallsboro, Columbus County, North Carolina. The plant was taken up and planted in Mr. Rankin's grounds and has since produced white fruits. It is interesting to note that the flowers are also white, though in the common plant they are described as bluish. Plants with pink fruits have been reported and the fruits of the plant under discussion when in full sun may take on a pinkish tinge, but the great majority are ivory white. In order that reference to the plant be made easy it is suggested that it be named *Callicarpa Americana alba*. It may be described as like the species with the exception that the flowers and fruits are white.

PRUNELLA VULGARIS NANA.—Many years ago, when the dwarf form of self-heal was first noted and named in this magazine, it had been growing for several years in one part of our lawn. I say lawn, for it was a part of the lawn, but a part where the grass simply would not grow for there was a double row of trees along the sidewalk with roots extending quite into the yard. There was a large patch of the self-heal and it formed a pretty ground-cover-

ing, the little blue flowers casting a blue shadow over the ground. I think it spread only as far as the grass failed to grow and I have not seen it elsewhere in New Jersey. —*Julia J. Noll, Plainfield, N. J.*

INSECTS AND THE WEATHER.—According to a Bulletin of the U. S. Weather Bureau a freeze in the cotton belt, during the first week of January, 1924, destroyed many tender crops in the winter trucking region, but it also destroyed a vast number of boll weevils, which contributed not a little to the making of a good cotton crop that year. The winter was not only a trying one for the weevils, but for many other insects as well. The box-elder bug, so numerous in some seasons as to amount almost to a plague, were practically absent from their haunts, this year, and the scale insects were greatly reduced in numbers. It is possible that some of the reduction in numbers of scale insects was due to the frequent and heavy rains of the past summer which washed them from the trees and shrubs before they could become established. But the season was not an unmixed blessing, for in some regions the bumblebees were also reduced in numbers and in consequence the early lima beans were obliged to forego their ministrations and thus failed to produce a satisfactory crop.

PERENNIAL FOUR-O'CLOCKS.—The article on perennial four-o'clocks in the October *Botanist* interested me as I, also, have had some experience with these plants. Before coming to California, two years ago, we lived in the southwestern part of Ohio. The temperature during the winter usually falls to zero and quite often below that, so four-o'clocks are not generally grown as perennials. When we moved into our home there, during the summer of 1900, we found a large four-o'clock at the southeast corner of the house

in a bed of lilies of the valley, but close against the house. When freezing weather came the plant was apparently killed and we cut the tops off and threw them away. Rather late the next spring we saw strong stalks coming up out of the ground again, and this has happened, year after year, during the twenty-two years we lived there. If we had an unusually cold winter we would wonder if our four-o'clock had survived but sure enough it came up and doubtless has done the same during the last two years. We never knew how many years it had grown there before we moved into the house. The plant was covered with dark red flowers all summer and often grew to be four or five feet high. The walls in the foundation of the house against which it grew were of the common limestone quarried from the hills surrounding the city. There was no cellar or basement on the inner side of the wall though there were three cellar rooms under the house in the middle of which was the furnace. The front room was the coal room and this was in line with the four-o'clock but there was a stone wall between the coal room and the low place under the house against the wall of which the plant grew. Our plant was truly a perennial and gave us much pleasure. Out here the plants are of course perennials, for the ground never freezes more than an inch deep.—*Carrie M. Jacobs, Lemore, Calif.*

RESISTANT CHESTNUTS.—There is a possibility that the chestnut forests, which have been so nearly obliterated by the chestnut blight, may yet come back. In the October issue of this magazine, note was made of certain trees that have thus far escaped the disease, and a writer in *Science* inclines to the belief that the blight is losing its virulence and suggests that the chestnut species may sur-

vive the attack. There seems to be evidence for the belief that some trees are recovering from the infection and producing new crowns in place of those recently killed. It is suggested that owners of chestnut forests in which there are trees still alive, be not in too great a hurry to cut down and market the timber. The U. S. Bureau of Plant Industry is carrying out experiments with cions and seedlings from resistant trees and the Bureau will be glad to know of other trees in infested areas which seem to have withstood the blight.

YELLOW-RED FRUITS.—Plants with red fruits are apt to produce yellow-fruited varieties on occasion. The yellow tomato is a good illustration of this and so is the recently originated yellow delicious apple for which a nursery firm is reported to have paid $1500. Most yellow-fruited plants, however, are far from being so valuable. They simply represent some diminution in color, comparable in a way to the white-fruited forms so common in red-, black-, and purple-fruited species. The yellow forms seem to be half-way between the ordinary color and its entire absence, and seem most common in plants colored by chromoplasts rather than by cell-sap. Mr. O. M. Schantz has recently sent us specimens of a yellow-fruited chokecherry (*Prunus Virginiana*) collected, last summer, near Lawrenceville, N. Y. He reports a large colony of the plants with all the fruits yellow. This is the form which Sereno Watson, a generation ago, named *leucocarpa*. Another yellow-fruited plant comes from Mrs. Fannie M. Heath, Grand Forks, North Dakota. This is a form or variety of the high-bush cranberry which differs in no respect from the type except that the fruits are a clear yellow. This form may be known as the variety *flavicarpa*.

As to what species of plant it is a variety of, there is considerable difference of opinion. Our high-bush cranberry was originally regarded as *Viburnum opulus* in which case our variety would be *Viburnum opulus flavicarpa,* but the American plant, itself, is by many regarded as a variety of *Viburnum opulus* and, unless it is finally given the position of an American species, it would be called *Viburnum opulus Americanum* and the yellow-fruited form would be a variety of it.

More Bad Weeds.—The editor of the *Joemma Bulletin* objects to the obedient plant (*Physostegia Virginica*) as an ornamental garden plant because of its weedy qualities. In some gardens it is said to spread beyond all bounds. It is true that the plant is no shrinking violet, but in most grounds it does not seem to belong to the strictly pestiferous class. One stroke with the hoe will settle it in spots where it is not desired, which is more than can be said of the dandelion, the lily-of-the-valley, moneywort, *Lysimachia clethroides, Oenothera Fraseri* and a number of other well-known pests. Editor E. F. Bigelow, of the *Guide to Nature* comes forward with another candidate for public execration. This is no other than the ordinarily meek and lowly *Galinsoga.* Dr. Bigelow writes that it is practically impossible to exterminate it in his grounds. He thinks it would be no exaggeration to say that he has removed carloads of it, and characterizes it as the fiercest weed he has ever known. Mr. C. F. Saunders writing from Pasadena says: "Out here one of the principal menaces to many of our delicate native species of wildflowers are certain introduced species which have over-run parts of the State at an unbelievable rate (with the rapidity of an epidemic, to quote an expression of Mr. Parish's). This is particu-

larly true of two species of *Bromus* which were all but unknown twenty years ago and today cover the State up and down from the ocean to the desert.

AGE OF THE CALIFORNIA BIGTREE.—The history of the Bigtree, or technically the *Sequoia Washingtoniana*, now found in isolated and sheltered spots in the Sierra Mountains of California, reaches back into the very beginnings of history, to a period when this tree probably covered the slopes of western coast mountains twice the height of the present ranges, and extended from some point well north of 49° down into the Lower California peninsula. A factor in its present limited range, says the United States Forest Service, is the strange geological transformation that some hundreds of centuries ago came over what is now California. In the high mountain ranges of those days, running up to 20,000 feet or more in altitude, came a volcanic disturbance, so that molten lava poured through the valleys and stream channels, filling them up and blocking the streams. After the lava had cooled, it was so much harder than the granite of the original mountains that it resisted erosion as the granite could not. As a consequence, the granite peaks wore away, and the lava beds remained until finally lava-covered ridges towered above deep canyons worn in the native stone, and streams flowed and still flow many thousand feet below the level of the streams once shaded by the Bigtree's grandsires. Not long ago miners in the Tahoe National Forest working a gold mine 2,500 or 3,000 feet below the lava cap of one of the Sierra peaks, in one of the former streambeds, came across an old flood deposit in which were the tangled logs of a group of the Sequoias that once grew on the mountain slopes. Though buried for unknown thousands of years,

the logs were in excellent preservation. They were changed somewhat in structure, but the annual rings in a cross-section of the wood stood out as plainly as though the trees had been felled only a few days before.

FORM OR VARIETY.—It would puzzle anybody but the closet naturalist to distinguish between a form and a variety. We have certain entities which we call botanical species but these are by no means fixed and unvarying. De Vries has shown that the botanical species is made up of a number of lesser forms which, when separated out, may be expected to remain constant to certain characters they possess. Occasionally nature takes a hand in the separation and we may have geographical, ecological, chronological, and climatological forms as well as numerous others such as cut-leaved, weeping, double, albino, dwarf, and multicolored. Just where to draw the line between the important and the unimportant is a problem. Only in rare cases are the distinctions worth much attention. It is difficult indeed to understand how a real botanist can have the hardihood to juggle them back and forth from form to variety and add his own patronymic to the changes. Nor can one look with approval upon the habit of dignifying albino forms of either flowers or fruits with long descriptions in Latin and a double author-citation. All forms should have a name since they are more easily indicated by such means but no personal advertisement is needed to assure the botanizing public that a certain specimen lacks the color customary in the species.

EDITORIAL

Between volumes this magazine has changed printers in the expectation of being able to put out a better publication than ever. If this number should be a few days late, we trust that our readers will consider this a satisfactory explanation of the delay.

* * * *

To the disinterested observer, it is astonishing that any church-man should find it worth while to quarrel with the scientist about evolution. One might go further and suggest that whether man is related to the so-called lower animals, is a matter of no special significance. If the genus *Homo* branched from the animal's family tree, the event occurred so far in the past as to leave most of us quite unconcerned about it. Made out of dust, man certainly is—the chemical elements in his body are the very commonest in existence—but the animals are made of the same elements. Whether these elements were put together differently in the case of man than in the other organisms nearest like him, may be a question, but its answer will never be found by argument. If we must come to an agreement as to the exact manner of man's origin, it is time the subject was taken from the realms of religious controversy and settled on a basis of fact. Religious enthusiasts, who attempt to dismiss the subject by making any discussion of it illegal, can scarcely be accused of possessing an open mind. It would seem more to the point to ascertain, if possible, what the facts in the case are,

and render a verdict accordingly. No matter what the decision now is, nor how artfully the facts have been manipulated to arrive at it, if it does not represent the truth, some more courageous generation will change it.

* * * *

A large number of people find evolution repugnant because of its implication that man descended from ape-like ancestors. The idea that man has progressed upward from less intelligent creatures does not appeal to them. The belief that animal and plant species are fixed and unchanging is firmly held in the public mind because it is supported by the Biblical account of Creation. Nobody, however, who considers the history of our planet, can doubt that there have been vast changes in the very earth, itself, and in the animals and plants upon it—a single visit to the nearest collection of fossils will be enough to convince the most skeptical—and it seems logical to assume that man has changed with the rest. Indeed, we know that man has come up from savagery and to that extent, at least, is a product of evolution, for evolution is simply development through change.

* * * *

The scientist, confident that the truth must ultimately prevail, has paid little attention to the attacks of misguided anti-evolutionists, but since it has been seriously proposed to prevent as far as possible, even the discussion of evolution—to prohibit thinking except along lines regarded as safe and conservative—he has shown a disposition to defend himself by the use of the best of all weapons for such purposes—the cold facts. There are those who still prefer to argue the merits of a case by quoting some ancient aphorism or pious text, but facts are stubborn things and cannot be routed by such means.

The idea of evolution did not originate with Darwin, as many suppose. It was discussed as far back as the time of Aristotle. Darwin merely suggested a possible cause of such evolution and investigated the facts upon which it rests. His theory in brief is that animals and plants produce more young than can possibly come to maturity and that in consequence of this the weaker drop out and those best fitted for their environment survive. We may see evidence of this about us anywhere if we choose to look. The more we consider the matter, the more reasonable this explanation seems and it is no surprise to find that the scientists, almost to a man, accept it.

* * * *

Although scientists agree as to the facts of evolution, and accept as proven the proposition that plants and animals have changed—in many cases enough to become new species—they are still in the dark as to what causes living organisms to change in making adjustments to their environment. But this should not disturb the scientist nor contribute to the elation of the churchman. It would make little difference in human affairs if the matter were never settled. Those who find the subject of evolution still enveloped in obscurity would probably find a reading of "Evolution or Christianity" by Dr. William M. Goldsmith very interesting. Dr. Goldsmith, who is professor of biology in Southwestern College, has attempted to present the scientist's side of the argument and to point out some of the errors in the arguments against the general theory of evolution. The book includes chapters by Osborn, Fosdick, Lyman Abbott and others and should be read by all who desire to get at the facts. What inferences they may make from these facts is not so important as that they get

the facts. There are nearly a hundred pages in the volume which may be had bound in boards from The Anderson Press, Winfield, Kansas, for fifty cents.

BOOKS AND WRITERS

The *Weekly Florist* has begun publication in Chicago. * * * It looks prosperous and probably will continue to be so. * * * It takes these fellows commercially interested in plants to get sufficient money to make a substantial publication. * * * *"For Better Delphiniums"* is the awkward title of a new biennial devoted to the cultivated larkspurs. * * * It hails from San Rafael, California, and costs 50 cents a copy. * * * One must look it through to realize the recent improvements in the perennial larkspurs. * * * Flowers larger than a silver dollar are no longer a novelty. * * * The single number we have seen contains fifteen illustrations. * * * Harvard University is to have a new botanical garden, or rather, the old one is to be greatly extended under the direction of Stephen F. Hamblin. * * * It is proposed to make this garden a testing-ground for all the plants that will stand the climate there. * * * When they get established they expect to have more than 10,000 species assembled. * * * It is well known that many of the plants in cultivation are misnamed and it is intended to work out the correct names. * * * The original garden was founded in 1807. * * * In 1921 Professor M. L. Fernald and party explored parts of Nova Scotia. * * * An account of the interesting features has appeared from time to time in *Rhodora* and these articles have now been printed in pamphlet form with the title of "Notes on the Flora of Nova Scotia." * * * A number of new forms and varieties were discovered. * * * There may not be

any blue dandelions, but the Japanese *Botanial Magazine* lists a white one. * * * The Japanese name of the plant is Shirobana-tempopo, the last half of the name being the dandelion. * * * A rose with white streaks on the otherwise rose-colored petals is described from Colorado by Dr. E. B. Payson. * * * It is a variety of *Rosa nutkana* which is now named *Schedinorum* after its discoverer. * * * It is apparently of the same nature as the York-and-Lancaster rose which legend connects with the "War of the Roses." * * * U. P. Heidrick has issued a revised edition of his "Manual of American Grape Growing." * * * It has been discovered that Narcissus bulbs can be grown in America according to a recent Government Bulletin. * * * Wonder if the Federal Horticultural Board knew about this when they closed this country against foreign grown bulbs! * * * Importations were forbidden for fear of bringing in plant pests but the new bulletin says that the enemies of the daffodil are very few in number. * * * Judging from the date-line, the *Flower Journal* has moved to La Jolla, Calif. * * * C. F. Saunders says that the ordinance against picking the yucca, mentioned in our last issue is a local measure designed to prevent the tourist from dragging home the magnificent inflorescences of *Yucca Whipplei.* * * * It is such a beautiful sight when in bloom that the tourist just cannot keep his hands off it. * * * We almost got by with a slip in the last issue where we wrote that the orchids have united petals. * * * But Dr. J. H. Schaffner of the Ohio State University spotted it at once. * * * Although embarrassed by our carelessness, we feel complimented to find that acute botanists read the magazine so closely. * * * The U. S. Department of Agriculture has a new Farmer's Bulletin (No. 1381) on herbaceous perennials that hits the high places but is worth having. * * *

Its main defect is that it telescopes the common names like a German professor. * * * But let nobody believe that peonies bloom the second or third year from seed. * * * It takes longer than that. * * * The seedlings do not appear above ground the first year, though they do develop a long root. * * * Dr. Maurice A. Bigelow has written a little book on "Adolescence" in the National Health Series. * * * It is well done and is a worthy member of an authoritative and useful set of books designed to promote the general health of our country.

* * * *

Pliny Haines Hawkins' little volume on the "Trees and Shrubs of Yellowstone National Park" is a book that the botanizer ought to enjoy. Although the plants are correctly named and the subject matter is authentic, the author has not found it necessary to adopt the language of the technical botanist. He might be sitting on a rock and talking to the novice about what makes the nearest plant interesting so far as his handling of the subject goes. There are no strictly botanical descriptions yet one gains a very good idea of each species from these thumb-nail biographies, and ought to recognize his plants at once. We need more books of this kind. The author should give us another volume on the wildflowers of the park. There are a number of illustrations from photographs and a little more than 100 pages of text in the book. It may be had from the author at 1919 Regent Street, Madison, Wisconsin, for $1.00 postpaid.

There are two groups of plants of special importance to man. The first contains the flowering plants from which come most of his food, fuel, and shelter and the second comprises the fungi which are forever waiting an oppor-

tunity to tear down these more desirable species. The little book by W. A. McCubbin entitled "Fungi and Human Affairs," therefore, ought to interest a wide circle of readers. The volume is written in language that the lay reader can understand and is illustrated with clear pictures of the specimens mentioned. There are chapters on the Nature of Fungi, Bacteria, Edible Fungi, Plant Diseases, Food Preservation, and the like, and the book can be recommended to all who are interested in the subject. It is published by the World Book Company, Yonkers, N. Y. and costs $1.00.

A fourth edition of Dr. Charles J. Chamberlain's "Methods of Plant Histology" comes to remind us again of the permanent value of this work. Other manuals come and go but this one continues, perennially fresh and interesting. It has been kept up to date by no fewer than seven printings. This new issue has been practically rewritten, which has permitted the amplification of the directions for collecting and preserving material and the addition of such new practices as have shown their worth. The new edition consists of 350 pages and more than 100 illustrations. The laboratory student or teacher of botany will naturally turn to it for directions in all new undertakings. It is published by the University of Chicago Press, Chicago, at $3.25 net.

It does not require much observation to discover that bees are benefited by their visits to certain flowers, but the importance of such visits to the flower is not so obvious; in fact, it was not clearly understood until comparatively modern times. The German botanist, Christian Konrad Sprengel is credited with the discovery of the insect's service to the blossoms, though the association of

insects and flowers was noted as early as the time of Aristotle and frequently commented upon. Since Sprengel's time much investigation has been carried on to discover if possible what it is about flowers, aside from the nectar and pollen, that attracts the insects to them. Conspicuous among investigators by reason of their extended, painstaking, and ingenious experiments may be mentioned Plateau, Muller, Lovell, and Forel, but even such high authorities are far from agreeing as to the conclusions to be made. It can scarcely be doubted that odor and color play an important part in attracting insects, but the subject is complicated by the fact that insects probably do not perceive color and odor exactly as we do. In an endeavor to get nearer to the truth, Frederic E. Clements and Francis L. Long have re-examined the published data in the light of numerous experiments of their own. An account of their investigations, with such additional facts as were discovered, has been given to the public in a publication of the Carnegie Institution of Washington. The volume consists of 275 pages of text and 18 plates and is entitled "Experimental Pollination; an Outline of the Ecology of Flowers and Insects." In discussing the subject the normal pollination of each flower is described and the observations of other observers summarized, and then follow detailed accounts of the authors' experiments in which are included changes in the position of the flower, the mutilation of various parts, the substitution of artificial flowers, artificially colored flowers, the addition to the flowers of various odors and perfumes, the addition of honey, etc. Although many of these changes resulted in puzzling the insects, they did not entirely prevent their visits nor modify their methods of collecting pollen and nectar. No

very definite conclusions, therefore, could be made, though we wish the authors had expressed themselves on certain points with more definiteness. Aside from the new facts recorded, the volume is of lasting interest because of the immense amount of material that is here brought together on the pollination of flowers in general.

What a goodly array of bottles and jars used to be stored in these old-fashioned rooms, which were the housewife's pride and the centre of her activities. Here were the liqueurs she took such pleasure in making, the simple ratifias, so called because some such liqueur was taken at the ratification of a bargain—some made from cherries, some from almonds—and the stronger rosa salis, a cordial famous in Elizabethan times, flavored with orange flower water and cinnamon and strong with aqua vitae. Rarely wanting, too, was the old original absinthe, made from wormwood, as now, but in those days a harmless drink, innocent of alcohol. As the seasons passed on, a varied store of homely wines was always in the making—cowslip, elderberry, gooseberry, rosemary, to mention but a few. A wholesome beer was brewed even from the nettle; and the dandelion, too, supplied a wine that was by no means despised. For medical use, conserves made of the leaves of rue, mint, scurvy grass and wood sorrel, and from the flowers of rosemary, mallow, lavender and hyssop, were ranged by syrups of buckthorn, mulberries, marsh mallow, saffron and the pungent garlic, and many another homely remedy had its place beside them.—MRS. M. GRIEVE.

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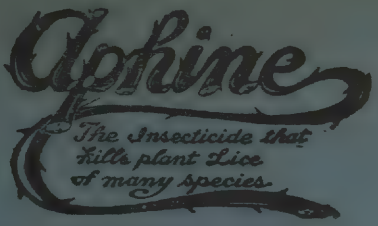

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CEANOTHUS MICROPHYLLUS

THE AMERICAN BOTANIST

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Yesterday the twig was brown and bare
Today the glint of green is there,
Tomorrow will be leaflets there;
I know no thing so wondrous fair
No miracle so strangely rare.
I wonder what will next be there!
L. H. Bailey.

THE SPECIES OF CEANOTHUS

By WILLARD N. CLUTE

ONE is strongly tempted to call the plants here discussed Ceanothi or Ceanothuses for lack of a more generic common name. Usually there is some vernacular name applied to a group of plants that is so distinct or descriptive that it may be used for the whole group, but in the present case the rule does not hold. If the discussion were limited to the forms of eastern America, the names of Jersey tea or redroot would be sufficiently distinctive, but for the Western and Southern forms other terms must be used. In the latter regions, the plants are variously known as buck-brush, soap-bush, California-lilac, and snow-bush.

The little New Jersey tea (*Ceanothus Americanus*) is practically the only member of the group in the North Atlantic States. Everybody familiar with its appearance, however, will have little difficulty in recognizing the other members of the genus at sight. The flowers, though small,

are very characteristic, with hooded petals on long stalks, and are borne in such profusion that the species are counted among the shrubs with conspicuous blossoms. An idea of how very abundant the blossoms are may be gained from our illustration of *Ceanothus microphyllus* made from a photograph taken in Florida by W. M. Buswell.

The genus *Ceanothus* is exclusively American. It contains some 36 species, all of them woody, and some attaining the size of small trees. They are found in practically all parts of the United States, but are most abundant in the South and West. California contains more than half of the species. In the East the flowers are white or cream colored, but in California several are blue, which accounts for the name of lilac. A few are said to be fragrant.

Some of the species are thorny, among them *Ceanothus Fendleri,* which forms flat little thickets on mountain summits in the Southern Rockies. The stiff, though pliant, stems make a springy bed if one happens to have enough blankets to protect himself from the thorns. As might be expected of a genus related to the soap-berry and other saponaceous species, nearly all the plants have a soapy quality residing in the flowers and fruits that make them useful when other soap is not at hand.

SOUTH SEA WILD FLOWERS

By J. O. Stancliff

IT was in a room of the historic old plantation house of Tahauku valley, island of Hiva-oa, Marquesas group, now long since deserted, and so badly damaged by a tidal wave that it seemed to be standing on one leg, that I dwelt for six long months, beginning with November, 1922. The

enormously wide verandas sagged and rocked when I walked across them, and were the nesting-place for myriads of hot-tempered wasps, a naturalized species from South America, while centipedes bred under anything that offered them shelter about the foundations and in the shade of the surrounding lofty coconut palms, mango and *vi-* (pronounced "vee") apple trees (*Spondias dulcis*).

The tidal wave had covered the lower part of the valley, as well as the floors of the old house, with a layer of sand. Through this the temporarily smothered herbage had to spring gradually. It was not long, however, before a complete vivid green carpet of grasses and weeds, most pleasing to the eye, and especially so to the bare foot, covered all the area except under the deepest shade of the mango trees. With these were hundreds of small pink lilies, of a sort my mother used to cultivate under the name of "fairy lily," and many larger pink and white lilies. Sturdy castor-oil plants shot up to small-tree size in next to no time, it seemed, while a familiar New England weed, *Portulaca oleracea*, or "pusley," (native name, *pokea*), supplied me with several meals before I found out about the edibility of wild taro.

If only the valley had contained just a few blue spring daisies or bluets in one or more of its moist, rocky situations, I should have felt almost at home. *Erigeron*, however, is absent; the snowy-flowered coffee is the best representative of the madder family; and wild carrots are never seen waving in the rare small clearings among the coconuts. The French naturalist Jardin found but a single Umbellifer in these islands.

It was in the shallow bed of the singing creek, usually on islands of greenery, intermingled sometimes with the taro, that I found what I thought was the typical Marquesan flower,—tallish spikes of violet flowers, with glutinous, aromatic stems and leaves. A half-caste told me they are

called in the native tongue for their color, violet. Mr. Forest Brown, of the Bishop Museum, Honolulu, says in a letter that their name is *taroa*, which has nothing to do with their color, but it is too bad if this is so, for the odd corollas do actually resemble violets, in shape as well as in shade. This plant is said to be *Angelonia* of the figwort family, and probably a garden escape. I found it first in the creek of Vaipae, island of Uauka, near Nukuhiva. Later I was to see it growing in a garden of Tahiti, 800 miles south. Another wild flower of villages and valleys that by a stretch of the imagination takes the mind back to violets, is the blue *Commelina*.

A *Bidens* is found somewhat sparingly on the mountain trails among luxuriant ferns. This flower is yellow, daisy-like, has rich-looking, deep green stems and leaves, and grows in a smaller and larger edition, on separate heights. Jardin discovered four entirely new species and a variety of *Bidens* on Nukuhiva. I was very much pleased, and rather astonished, to find both flowers and fruit of an ericaceous black berry, like huckleberries, but tough-skinned like the salal berries of the Pacific Coast, growing with the *Bidens*. I could easily imagine myself on some wonderful ferny ridge or hogback of my native country, though an occasional dove- or tern-like bird, called a fairy tern (*Gygis candida*), circled close above my head, and the long grass severely cut the hands and arms of the careless traveler along the half-hidden trail. This huckleberry (*Vaccinium cereus*), grew only on low bushes in the middle or along the sides of the trail. Its flavor did not seem to me to smack very much of New England pastures.

Unfortunately, I never visited that plateau of Hiva-oa which is said by romancers to abound with showy orchids. I saw gigantic, long-tubed white morning-glories, it is true, twining in the tops of wild papaya trees on the northerly,

or warmer, side of the isle, and along the rocky bluffs leading to Atuona. These flowers differ remarkably from the unusually short, broad blossoms of the tree-top convolvulus of Tahiti, which in August turns immense trees into a sort of very leafy flowering dogwood, or very floriferous magnolia. The only orchid I observed in Tahauku or elsewhere was the vanilla, which has thick stems, and forms remarkable hanging curtains, arches and bowers where it has run wild in the higher part of the creek's rocky course. Other orchids, if any, bear inconspicuous flowers. Jardin mentions but one native Marquesan orchid, which the natives called *ekaveinekae.*

Convolvuluses are many in Polynesia. First, on all the islands, there is the large pink species, with nearly round, fleshy leaves and stems, rambling over the beach borders and over the lovely natural lawns to be found close to little fresh-water ponds behind the beaches. Often, too, the vines root in the loose earth at the tops of cliffs, and hang over in sturdy streamers, fathoms long. If twitched from below, they promptly release showers of dirt and stones upon the twitcher. There are fully a dozen smaller common species, but all are attractive and not at all weed-like. In Raiatea, a gem of an island belonging to the Society group, beside the trade-wind-swept road between Uturoa and Faaroa, I found a beautiful white water-convolvulus, growing in still, clear, fresh water not far from the beach. Along the landward side of this same tree-shaded beach road, the leaves of small pink morning-glories vary like those of violets from the heart shape to the bird-foot. Natives told us that a species of white aster, like our fall asters, cultivated in gardens along this road, was brought down from high locations in the same island, where it is wild.

Sow thistle (*Sonchus laevis*) was found in the principal northerly Marquesan island, Nukuhiva, by Jardin in the

sixties, and was then used as a medicinal plant by the natives. The burdock (*Arctium*) was nearly the first plant I set eyes on after landing in Nukuhiva. It has come in within the memory of young Marquesans, to harass them and fill their ponies' manes with burs. This species had full sway also in the capital, Atuona, sixty miles' sail to the southward, and was beginning to make inroads in Tahauku, mingling with the young castor-oil plants.

In one shaded gully, or alcove of the trail around Hiva-oa, were the flaming tongues of a salvia, (*S. pseudo-coccinea*). In the valleys, but climbing to the high parts of the trail on the north side of the island, I chanced upon the brilliant orange and vermilion heads of a milkweed (*Asclepias curassavica*), suggesting our own *A. tuberosa,* but very much brighter in tints. The Cruciferae, likewise, did not go unrepresented, a somewhat fleshy-stemmed member thereof, with showy white flowers, being found on the ocean cliffs. There is a cress (*Cardamine sarmentosa*), abundant in the creeks, and some yellow mustard in one small clearing, probably Chinese cabbage escaped from a former Chinaman's garden.

The nightshade family is well represented in Hiva-oa. Tobacco was apparently imported into the islands. It has been grown in the lowest parts of certain valleys, where the natives could not readily obtain the ready-made product, and the pink flowers and slightly mullein-suggesting leaves still crown small eminences at the mouths of some deserted valleys. Frederick William Christian (1903) says that on the north coast, west of Hanaiapa, near the magnificent cascade Vai-'e'e, he saw "slope upon slope of barren mountain, all ablaze with the pink blossoms of the tobacco-plant,—the only weed that will flourish in this arid wilderness."

The small nightshade-shaped flowers and slim, bright red pods of *Capsicum frutescens,* a most pungent chili, are commonly met with in shady, moist places; while the similar flowers and bladder-like fruit of *Physalis* give character to the shrubbery of some sunnier valleys like Atuona. Jardin reports *Datura tatula,* but I did not see it.

Although *Lantana camara* is listed by Jardin, not one of its beauteous pink and yellow blossoms met my eye during my stay in the Marquesas, and not once was I seized upon or hemmed in by the armed stems of this vegetable monstrosity that has possession of all the wild lands of Tahiti! And yet, so fair are the flowers that I find myself associating them in memory with the lovely, dewy mornings and with the sunsets over Murea. A paradoxical shrub is the lantana.

The little passion-flower vine, which Jardin says was introduced, bears fruits that drop off and fairly fill the paths in certain hilly locations, where they pop interestingly under foot. Once, while taking a bath in a little Tahitian stream, I noted a great passion-flower vine climbing in a tree,—no doubt granadilla,—bearing enormous flowers beautifully tinted with varying shades of purple and white. The pretty little pink-flowered sensitive plant (*Mimosa pudica*) would perhaps close its little leaflets even more tightly if it could know that the natives call it by a word meaning "liar,"—in allusion, no doubt, to its simulating death when touched. Jardin recognizes a smooth and a hairy variety.

An account of Marquesan flowers is incomplete without at least a mention of *Hibiscus tiliaceus,* the *purao* tree, whose yellow blossoms, hanging like huge lemons at intervals among the large hearts of leaves, fall easily, strewing

the ground like leaves. They turn red, or reddish, almost as soon as they fall. Once I surprised a land crab carrying one into his hole, probably for food. Falling in water, they make pretty sailing-craft.

Other trees bearing showy flowers are the *hutu*, (*Barringtonia speciosa*), in low valleys near the sea, with handsome, purple-tasseled flowers; the *mape* (Tahiti, or native, chestnut), in Marquesan *ihi*, (*Inocarpus edulis*), a water-loving forest tree, with fragrant, small white, strawberry-like flowers; the flaming red flamboyant, (*Poinciana regia*), planted in low valleys, a truly splendid sight when in full bloom; the candlenut (*Aleurites triloba*), a forest tree bearing flowers like white lilacs; and the China tree (*Melia azedarach*), which I hailed familiarly, yet with some incredulity, on the wild plateau, having seen it last in the back-yards of a southern city. Once I traced an unusual fragrance to the pure white flowers of a papaya tree concealed in the shrubbery; and Christian tells us that pandanus flowers waft the sweetest airs. The guava, and the *nono*, sometimes called Tahiti apple, (*Eugenia*), both carry pretty white blossoms, while the wild cotton flower is yellow.

In returning from the Marquesas to Tahiti, I had to pass among the Tuamotus, or Low Archipelago. Owing to the scarcity or absence of dirt in the coral, their flowers, though very interesting, are not too numerous. I remember a wild member of *Cucurbitaceae* rambling the beaches; an ubiquitous ground ivy known to the Tuamotuans by the odd-sounding title of *ngeo-ngeo*, and shrubs or trees called *miki-miki*, *uu*, etc., all of which were flowering in June and July.

THE MEANING OF PLANT NAMES—XXIII

RUBIACEAE

By WILLARD N. CLUTE

SURVEYING our species of the Rubiaceae, the student might hastily conclude that the family is of little significance; as a matter of fact it is a large and important group containing approximately three thousand species. The majority of these are tropical and the half dozen genera to be found in our Northern States are extensions, one might say, from the main body. Our plants belong to two well-marked sub-families, one, the Coffeoideae, named for the plant which a large number of people think they cannot do without, and the other, the Cinchonoideae, from the cinchona plant from which is extracted quinine, a natural accompaniment of certain alcoholic beverages in some sections.

The technical names of the Rubiaceae in our region contain little of interest to the student of plant lore. Nearly half of the generic names have been given in honor of scientific men. One of the best known of these is *Mitchella*, the name of the little partridge-berry, which commemorates Dr. John Mitchell, an early resident of Virginia and a correspondent of Linnaeus. In *Houstonia*, to which the bluet belongs, an English botanist, Dr. Wm. Houston, is remembered, while Dr. William Sherard, a patron of Dillenius, is honored in *Sherardia*. An inconspicuous plant named *Oldenlandia* is named for H. B. Oldenland, a Danish physician and botanist who died near the end of the 17th century at the Cape of Good Hope.

Asperula, from *asper*, meaning rough, is the generic name of a group of plants native to the Old World but occasionally found as escapes in this country, among which the "woodruff" or "waldmeister" is most important. From two Greek

words meaning a seed and a point comes *Spermacoce*, perhaps suggested by the appearance of the calyx teeth in fruit. *Diodia* is a genus about whose derivation the botanists disagree. Gray says it is from the Greek *diodos*, meaning a thoroughfare, because the plants grow along roadsides, but Wood derives it from *di*, meaning two, and *odons*, a tooth, because of the two calyx teeth.

The genus to which the button-bush belongs is appropriately named *Cephalanthus*, for this is from two Greek words meaning head and flower, which very accurately describes the spherical flower-clusters. *Galium* comes from *gala*, the Greek word for milk, because certain species, *G. verum* especially, have been used to curdle milk in cheese-making. The genus *Rubia*, for which the family is named, is not represented in this country, but it may be said that the name comes from the Latin *rubra* meaning red. It was from a species of this genus that the red dye, madder, was obtained. The invention of aniline dyes ruined the madder industry and rendered the word madder nearly obsolete in our language, but the plant itself goes on its way serenely.

In our region, the madderworts pretty generally have insignificant flowers, though in some cases they are so abundant or so fragrant as to attract attention. Several of the species are counted as mere weeds and some of them have no common names. This is true of our only species of *Spermococe*, though it is sometimes called "smooth button-weed" to distinguish it from species of *Diodia* which are by inference, as well as in fact, "rough button-weeds". The word "buttonweed", it may be said, refers to the small rounded clusters of flowers or fruits. *Diodia teres*, because of its abundance in sterile soils, is known also as "poverty-weed", "poor-land weed" and "poor Joe". *Diodia Virginiana* has been recorded as "Jacob's ladder", but this seems to be a misapplication and without significance

here. Another "button-weed" is *Oldenlandia uniflora*. This plant is also known as "creeping green-head", for no reason that I can discern, and "clustered bluets" from a fancied resemblance of the plant to the true bluets of the genus *Houstonia*.

Sherardia arvensis is "blue field madder", though madder is far from blue. The plant is also called "Herb Sherard". The reason for the name "spur-wort" is obscure, if there is any reason. The plant comes from the other side of the world, however, where the name may have some significance.

Usually when a plant has a multitude of common names it comes from Europe where the people have had time to think up a number of appropriate designations, but this is not true of *Mitchella repens*, commonly known as partridge-berry, which is a native American. In addition to what might be called its true vernacular name, it bears a large number in which the word "berry" is qualified by a distinctive prefix. Among these prefixes may be noted: tea, checker, squaw, Jesuit, eye, twin, deer, fox, chicken, pigeon, snake, two-eye, and one. Those consisting of the names of animals have been given mostly with the idea that they form food for the animals mentioned. "Eye-berry" and its variants refer to the two roundish circles on the fruit made by the remains of the two calyces. "Twin-berry" may possibly allude to this also, but it is more likely to allude to the two ovaries consolidated into one. The name "tea-berry" is frequently heard, but this name, and that of "mountain tea", seem to belong more properly to the aromatic wintergreen (*Gaultheria*). Frequently the fruit is called a plum, though its structure does not conform to such a definition, and we have "pigeon-", "squaw-", and "pudding-", "plum". "Boxberry" seems to be another reference to the wintergreen, though "running box" may be a

reference to the small leaves like those of the true box (*Buxus*). The trailing stems have given the plant such names as "squaw-vine", "partridge-vine", and perhaps "hive-vine", but "winter-clover" is a name of no application since the plant is not at all clover-like. Doubtless the name was misapplied long ago, but once on the printed page it is hard to dislodge. "Checker-berry", the dictionary says, belongs to the aromatic wintergreen, but it is frequently used for our plant. In neither case is the name explained. Since one meaning of checker is to mark with lines of color, our plant may be the true checkerberry after all, for its leaves have lighter veins which by a stretch of the imagination might be regarded as checkered.

The genus *Galium* has many insignificant species with two common names that seem to fit them all. The first of these is "cleavers", because several species have the ability to cleave or cling to the coats of animals. Sometimes the stems are supplied with tiny backward-pointing hooks by means of which they cling, but the fruits are pretty generally armed with similar hooks and it is difficult to say which gave the name to the plants. The second common name is "bedstraw", given from a very ancient tradition that the stems of these plants were mixed with the straw in the manger in which the infant Saviour lay. With these facts in mind a large number of the vernacular names become intelligible. *Galium palustre* is the "marsh bedstraw", *G. tricorne* is the "rough-fruited corn bedstraw", *G. boreale* is the "northern bedstraw", and *G. latifolius* the "purple bedstraw". *Galium asprellum* is the "rough bedstraw", "rough cleavers", "pointed cleavers", "clivers" and "catch-weed". *Galium lanceolatum*, which has the odor of licorice, is "wild licorice" and another plant with the same vernacular name is *G. circaezans*. This latter is also known as "cross-cleavers" because its leaves are in fours arranged in the shape of a cross.

Galium sylvaticum is the "wood bedstraw" and "Scotch mist", the latter name apparently referring to the numerous small flowers. The species is also called "baby's breath" but the species usually so called is *G. mollugo* which is often grown in gardens for ornament. This latter is also "infant's breath", "great hedge-bedstraw", and "white bedstraw". The "baby's breath" of the florist, however, is *Gypsophila paniculata*, one of the pink-worts. Our plant, as well as *G. tinctorium* is called "wild madder". As the name of the second species indicates, the root yields a dye, but *G. mollugo* cannot claim this distinction. *Galium tinctorium* is called in addition, "dyer's cleavers", and "stiff marsh-bedstraw", but why *G. mollugo* is called "whip-tongue" escapes me.

The sweet-scented or fragrant bedstraw (*G. trifolium*) is another species with a licorice-like odor. It is also known as "woodruff", but the true woodruff is an allied species (*Asperula*). The European *G. verum*, occasionally reported from this country, is our only species with yellow flowers. It is therefore "yellow cleavers", or "yellow bedstraw". It is regarded as the real bedstraw of the manger and hence is "Our Lady's bedstraw" and "bed-flower". "Curdwort" and "cheese-rennet" allude to its power of curdling milk, but "maid's hair" and "fleawort" do not appear to have any significance.

In the *Galium* genus, *G. aparine* stands first as regards the number of common names. First of all it is "cleavers", "cleaver-wort", and "clayver-grass"; its hooked stems make it "scratch grass", "scratch-weed", "catch-weed", "cling-rascal", "grip", "grip-grass", "bird-lime" and "love man". The clinging heads of fruit account for "beggar-lice", "harvest-lice", "stickleback", "stickaback", "wild hedge-burs", and "bur-head". The names of "hairiff" and "airiff" with numerous variant spellings appear to mean simply "hedge-

plant". Our species is often known as "goose-grass", though scarcely likely to be eaten by geese, and the name has been twisted to "gosling-grass", "gosling-weed" and "turkey-grass". Probably "gravel weed" refers to the places in which it grows. It is difficult to understand how such a pestiferous weed should come to be called "sweethearts", "poor robin" or "pigtails".

The bedstraw motif, as our artistic friends would say, has been carried over into the genus *Asperula* where *A. galeoides*, from its resemblance to the others, is "bedstraw asperula". *Asperula odorata* is called in the books "sweet woodruff" and "woodruff-weed", but the more usual vernacular name is "waldmeister" which may be translated as "master of the wood". Like several related species, this plant has coumarin in its tissues which gives it a pleasant vanilla-like odor. It was anciently used to flavor a beverage known as "spring drink" and has not entirely lost its importance for this purpose in foreign lands. The plant is also known as "sweet-grass", "sweet hairiff" or "hairof" and "hay-plant", all referring to its fragrance. "Mugget" and "mug-wet" refer to the use of this plant in flavoring drink, but the true "mugget" or "mugwort" is regarded by many as a species of *Artemisia* which is also used to flavor the cup that is at present outlawed in the land of the free. The word, "woodruff", it may be said, is from an old English word of uncertain derivation, but long in use for this species. The word "wood-rowell" is unknown to the writer and "rock-weed" and "star-grass" appear to be misnomers.

Most famous of the plants in the genus *Houstonia* is the little "bluet" (*Houstonia coerulea*) which though low of stature and small of flower appears in such abundance in low meadows each spring as to make them appear as if drifted with snow. The plant has a number of names

alluding to its unpretentious and modest demeanor, among which are "Quaker ladies", "Quaker bonnets", "nuns" and "innocence" or, as it probably should be written, "innocents". Sometimes there is a great difference in the meaning of a word when spelled differently—presents and presence, for instance. The word "bluet" is a diminutive of blue and refers to the pale blue flowers. These are also called "blue-eyed babies", "bright-eyes", "angel-eyes" and "eyebright". "Blue-eyed grass" is more properly applied to the species in the genus *Sisyrinchium*, while "star-of-Bethlehem" is a misnomer and "dwarf pink" far from descriptive. The name of "little washerwoman" is given in the books, but I doubt if the plant was ever really called by such a name. In the books, also, the plant is called "Venus' pride", but the genus is purely American and its species were discovered too late to be associated with any heathen goddess. *H. angustifolia* is also called "Venus' pride" but it is more properly designated by the pretty name of "star violet". This species is also known as "innocence" and "baby's breath". *Houstonia patens* is called "star violet" and may be occasionally known as "small bluet".

The round heads of cream-colored flowers make *Cephalanthus occidentalis* the "button-bush" *par excellence*. Other names suggested by the flower-heads are "button-willow", "button-wood shrub", "button-tree", "globe-flower", "honey-balls", "pin-balls", and "little snowball". Its irregular branches and its fondness for moist spots secure for it the names of "river-bush", "pond dogwood", "swamp-wood", "crane-willow", "crooked-bush" and "elbow-bush". "Crouper-bush" appears to have no meaning when applied to our plant, and "buck-brush" and "box" are apparently misnomers.

THE POST OAK

By Lucina Lombard

FROM early settlement days until half a century ago, in southern New England, *Quercus obtusilobata,* the iron or post oak, was used for fence-posts. In its days of plenty it was also used for dower chests, the wood being fine-grained, strong and durable.

The tree is of moderate size, with widely spreading and very crooked branches. The leaves, whose rounded lobes make a Druid cross, turn honey-yellow in autumn. The oval, deep-cupped acorns are very sweet and wild turkeys were reported to be so fond of them that in colonial times the tree was often called turkey oak. Thrifty farmers are careful not to cut the post oak, nowadays, for anything but sled stakes so that it may have a chance to reinstate itself.

The post oak belongs to the white oak group. Other typical New England representatives are the swamp white oak (*Quercus bicolor*) and the widely distributed white oak (*Quercus alba*). The trees have flaky gray bark and leaves which are not spine-tipped.

One of the principal foods of the North American Indians was meal made from acorns of the white oak group. Our white oaks continue to yield heavy crops and the few remaining Indians from Wisconsin to Washington still utilize them. The Indians of Massachusetts harvested the acorns, parched them and kept them for future use in storage baskets which were made of long willow sprouts. The early records of our Pilgrim ancestors tell of the discovery during the first hard winter of such a store buried in baskets in the ground.

In their natural state the acorns are bitter and cannot be eaten. In preparation the first step is to pound or grind the kernel in their soft sandstone mortars. The next process was the removal of the bitter tannin which is soluble in hot water. The Indians made a long shallow basin of clean-washed sand in which were laid a few flat fern-like ends of fir boughs. The acorn meal, mixed with hot water to the consistency of porridge was poured into the molds and as the hot water ran out into the sand, it carried away the tannin. The meal was then worked into dough and the pasty cakes were baked flat in the ashes. The Indians of the Great Lakes boil the meal as mush, usually with maple-sugar or venison.

The color of the cooked product is a dark chocolate brown. The taste suggests a mixture of corn meal and peanut butter. It is said to be very nutritious, because of its high oil and starch content, and is easily digested.

ACCENTING GLADIOLUS AND ARBUTUS

PLANT LOVERS, it is well known, may be divided into two groups as regards the accent in *Gladiolus* and *Arbutus*. One persists in calling them *Gladiol-us* and *Arbu-tus* while the other is as sure that *Gladi-olus* and *Ar-butus* is correct.

The philosopher, interested only in getting at the truth, is likely to point out that both sides may be right. But he is careful to distinguish between technical terms derived from the Latin or Greek, properly accented, and vernacular names made from these same technical words and accented exactly as the common people choose to accent them.

There is no question as to the correct technical accent of these words. They are properly *Gladi-olus* and *Ar-butus*, and their plurals are *Gladi-oli* and *Ar-buti*. The question is whether the common names made from these generic terms must follow the same accent. Everybody knows that in the vernacular the summer-flowering bulbous plant of our gardens becomes gladiol-us and the little ground-loving heathwort, arbu-tus. Their plurals are properly gladiol-uses and arbu-tuses. We have excellent precedent for the forming of such plurals in crocusses, narcissuses, convolvuluses, ranunculuses and a host of others. As regards the name of arbutus applied to the plant technically known as *Epigaea repens*, there is a third consideration to be taken into account, for this plant is not an *Arbutus* at all and therefore is absolved from trying to fit a Latin form. It always has been arbu-tus and those who would make it otherwise must show cause for their contention.

To be sure the dealer in plants is often at a loss to name his specimens properly and is disposed to tack an "i" on everything ending in "us", as crataegi, helianthi, pruni, and the like. However, the dealer is no criterion in such

matters for he often says specie when he means a single kind of plant and commonly regards phlox as a plural, though what he would call a single plant is difficult to say. So prone is he to follow the leader that he often speaks of a cacti-bed under the impression that a cactus becomes a cacti when planted with others.

If the common people desire to use the technical names and their plurals, nobody can say them nay, but when these same pedants turn around on their fellows and intimate that the latter are unfamiliar with correct usage, it is comforting to find that there is full authority for the use of the common pronunciations and not a little for accenting even the technical names in the same way.

In response to a note regarding the accenting of Gladiolus in a recent issue of the Literary Digest, that widely known authority, the Lexicographer, writes:

"Your letter of February 7th has been read with interest, and you have directed attention to a subject which appeals very strongly to your correspondent. Ten years ago while working upon his 'Desk-Book of 25,000 Words Frequently Mispronounced', he directed attention to the fact that in the pronunciation of the word *gladiolus* according to the dictionaries, the accent was placed on the second syllable, and the 'i' was rendered diphthongal. This pronunciation is recorded by the Standard Dictionary, by Murray's 'New English Dictionary on Historic Principles', Stormonth's Dictionary, Webster's Unabridged, Worcester, the Century, and the Imperial. The pronunciation common among the English masses is recorded by the Encyclopedic Dictionary and by Murray's New English Dictionary as an alternative pronunciation, with the accent upon the 'o' and with the 'i' short, *gladio'lus*.

"From what you say it is evident that the trade favors the less scientific form of spelling. In other words, the

plant-growers prefer *Gladioluses, Hibiscuses, Narcissuses, Crocuses,* exactly as we prefer *hippopotamuses, rhinoceroses,* etc.

"The point that you raise about *Arbutus* also interests me. We indicate the principal accent upon the first syllable, but the stress is placed upon the second syllable by the Century, which was based upon the Scottish Imperial Dictionary of Annandale, the English Encyclopedic Dictionary, issued by Cassell & Company, and Worcester's Dictionary. Our pronunciation is supported by Murray's New English Dictionary, Webster's Unabridged, and Stormonth.

"Commenting upon this word in his 'Standard of Pronunciation in English', my old friend, the late Prof. Thomas R. Lounsbury, said: 'In the Latin substantive from which *arbutus* came the quantity of the penult is short. If we conform to the pronunciation of the original, we should be obliged to call it *ar'butus.* In his work on orthoepy (published in 1784) Nares pointed out that the word was then commonly pronounced *arbu'tus,* 'tho,' he added, '*ar'butus* is more proper.'

"Personally, I feel that if we can accept *hippopotamuses,* there is no reason under the sun why we should object to *Gladioluses,* but all of this is foreign to the information given in 'The Digest'. As you will see if you will look at the head of the Column, the decisions given in that Column are based upon the Funk & Wagnalls New Standard Dictionary."

MANUALS OF THE UNITED STATES FLORA

COMPILED BY HENRY S. CONARD.

TRAVELERS, and recipients of collections from distant friends, are often at a loss to know what books to use for the identification of their plants. The accompanying map and bibliography should prove helpful. The many excellent floras of states or smaller areas are omitted. A list of these up to 1890 may be found in the Annals of the New York Academy of Science for that year, in a paper by Dr. Britton. Numbers in the following bibliography refer to the areas marked with corresponding numbers on the map.

KEY TO NUMBERS ON MAP.

1. Gray's Manual of Botany, ed. 7. Amer. Bk. Co. 1908.

Britton's Manual of the Flora of the Northern States and Canada. Holt. 1901. Includes 6 and 7. Out of print.

Britton and Brown's Illustrated Flora of the Northern States and Canada, ed. 2. Scribner. 1913. Includes 6 and 7.

2. Chapman's Flora of the Southern United States, ed. 3. Amer. Bk. Co. 1897.

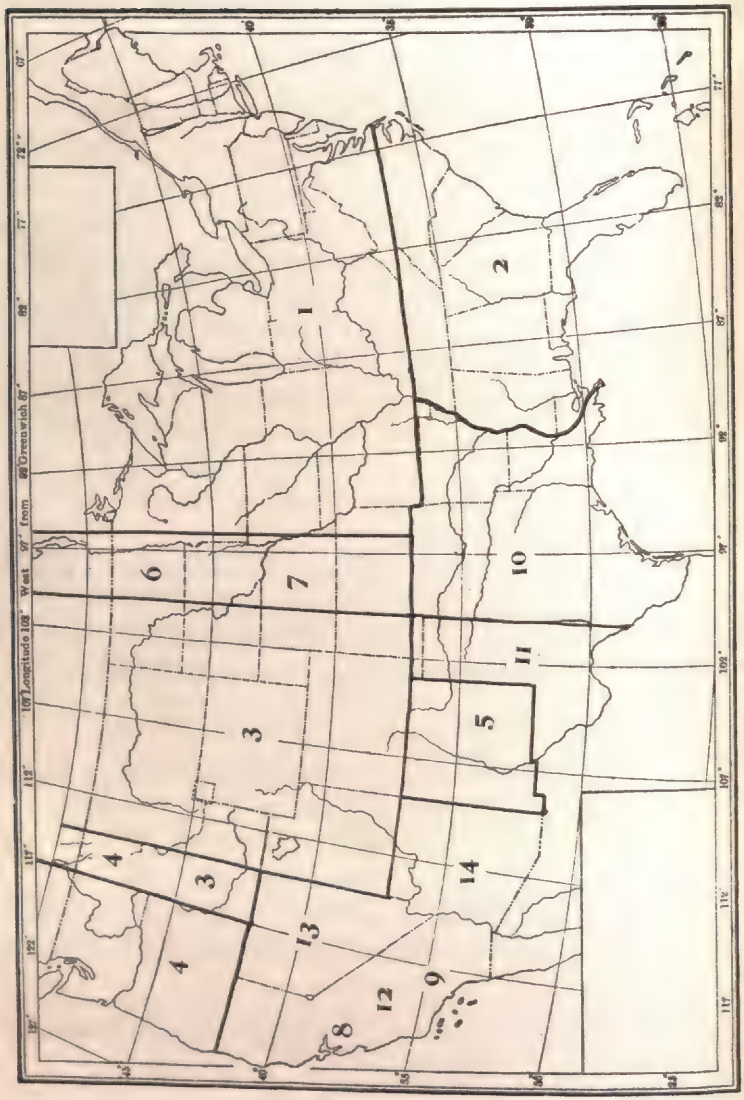
Small's Flora of the Southeastern United States, ed. 2. Pub. by J. K. Small, N. Y. Bot. Garden. 1913. Includes 10.

3. Rydberg's Flora of the Rocky Mountains and Adjacent Plains. P. A. Rydberg, N. Y. Bot. Garden. 1917.

Coulter and Nelson's New Manual of Botany of the Central Rocky Mountains. Amer. Bk. Co. 1909. Central part of 3.

4. Howell's Flora of Northwest America. 1897. Out of print.

Piper's Flora of Washington. Contrib. U. S. Nat. Herbarium, vol. 11. Washington, D. C. 1906.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Piper and Beattie's Flora of the Northwest Coast. State Coll. Pullman, Wash. 1915.

5. Wooten and Standley's Flora of New Mexico. Contrib. U. S. Nat. Herb. vol. 19. Washington, D. C. 1915.

6. Bergman's Flora of North Dakota. State Geol. Surv. Bismarck. 1913. See also 1.

7. Petersen's Flora of Nebraska. N. F. Petersen, East Lansing, Mich. Ed. 3. 1923.

8. Jepson's Flora of Western Middle California. Ed. 2. 1911.

Jepson's Flora of California. Cunningham, Curtis & Welch, San Francisco, Cal. 1909-22.

Jepson's Manual of the Flowering Plants of California. 1923-25.

Abrams' Illustrated Flora of the Pacific States. Stanford Univ. 1923. Includes 4, 8, 9 and 12.

9. Abrams' Flora of Los Angeles and Vicinity. Stanford Univ. 1917.

10. See 2.

11. Coulter's Manual of the Phanerogams and Pteridophytes of Western Texas. Contrib. U. S. Nat. Herb. vol. 2. Washington, D. C. 1891.

12. Smiley's Report on the Boreal Flora of the Sierra Nevada of California. Univ. of Cal. 1921.

13. Watson's Botany of the U. S. Geol. Exploring Exped. of the 40th Parallel. U. S. Geol. Surv. Washington, D. C. 1871.

14. See 5 and 13.

Grinnell College, Grinnell, Iowa.

MAN-EATING TREES

By WILLARD N. CLUTE

AMONG the most important and horrendous botanical discoveries of modern times are those recently made by "American Weekly Inc." and broadcasted, through the agency of the press, to the furthermost parts of our country. These discoveries relate to nothing less than certain horrible man-eating trees which lie in wait for their victims in the tropical forests and when they have secured their prey, suck their blood with great gusto.

To be sure no botanist of note has ever seen such marvels. They are always discovered by some ignorant native or some credulous traveller. The scientist is likely to spoil the whole affair by demanding the facts. He is not so easily satisfied as the globe-trotter and is not willing to take the word of some dusky savage. Thus it happens that while any botanist would gladly go to the ends of the earth to see and study a single specimen he has never had the opportunity.

But some of our Sunday papers which, by the way, have nicely turned the tables on the trees by devouring whole forests weekly without giving back anything of value in return, have located several of these "cannibal trees." The first to be reported is located in the "poisonous forests of Madegascar". Of course there are no poisonous forests in the world, though a few poisonous trees are known to exist, among them the poison sumach of our own bogs. The man-eating tree is said to have been discovered by a certain Dr. Liche, but he, alas, is now dead and unable to protest against the silly tales told of him.

According to the account recently published, a former State official of Michigan paid a visit to Madegascar to

study its people and though he visited "all but the most inaccessible spots" he failed to find the tree. Had he visited as many inaccessible spots as there are visible spots on a leopard the result would have been the same. His account, therefore, falls back upon the narrative of the somewhat mythical German doctor and according to the newspaper is included in a book on his travels.

The tree is described as like a gigantic pine-apple in shape with jaw-like leaves which crush the victims sacrificed to it. Of course the natives would sacrifice human victims to such a tree. It would not occur even to a life-sized moron, to cut down the tree and save a few of his friends and relatives. The account continues that the tree is "nothing more than a copy in larger form of other carnivorous plants whose operations are perfectly well known" Here is where the feline escapes from the three-letter word meaning sack. The whole account originated in the feverish imagination of some common or garden variety of reporter, anxious to create a sensation. It is a long jump from insect-catching plants to those which catch and eat human beings, and the scientific imagination refuses to make it.

Shortly after this blood-curdling tale was foisted on the public, the "American Weekly Inc." came along with another. This time the tree was located in the trackless jungle on the island of Mindanao in the Phillipines. A Mississippian on business in that part of the world found the plant and, according to the report, narrowly escaped being eaten by it. The tale goes on as follows:

"The whole thing had changed shape and was horribly alive and alert. The dull heavy leaves had sprung from their compact formation and were coming at him from all directions, advancing on the ends of long vine-like stems which stretched down like the necks of innumerable geese

and now that the old man had stopped his screaming, the air was full of hissing sounds.

"The leaves did not move straight at their target, but with a graceful side-to-side sway like a cobra about to strike. From the far side the distant leaves were peeping and swaying on their journey around the trunk and even the tree-top was bending down to join in the attack. The bending of the trunk was spasmodic and accompanied by sharp cracks.

"The effect of this advancing and swaying mass of green objects was hypnotic like the charm movements of a snake. He saw the heavy leaf curve like a green-mittened hand as it brushed his eyebrows in passing, he got the smell of it—the same animal smell that hung in the surrounding air. Another instant and the thing would have had his eyes in its sticky, prickly grasp, but either his weakness or the brown man's strength threw them both on their backs. The charm was broken!"

And now, thank Heaven we are safe again! Nevermore will we go to the Philippines to have our eyes handled or our eyebrows brushed by so hostile a plant. And after our economical and efficient Government has spent so much money on those islands on the other side of the globe, is it not humiliating to think that this awful plant has dwelt for years right at the back door, as you might say, of the great Philippine Bureau of Science, without their being aware of it? Why didn't they investigate that awful animal smell or couldn't they distinguish it among all the other smells?

But the tree is there—yes it is, for we wrote to the discoverer about it and he replies under date of January 8, 1925, that "The tree is there and in the main the account is true. The circle at the foot of the tree was about 80, maybe 100, feet in diameter. The tree looked nothing like

the drawings [in the paper]. It was as round as a smoke-stack—the trunk, I mean, and dark gray or ash-color. The whole tree was symmetrical and the tree and ground under it, was very inviting to a storm-beset or sun-depressed traveller. The clucking and hissing was, I judge, from a gluey consistency of, or on, the leaves. My impression was that if it reached me, it would fasten and hold me, and thus it had done to apes, birds and animals."

The point we make, however, is that no "sun-depressed traveller" ought to be allowed to write a scientific account of anything. He ought to wait, at least, until he gets over his depression. Still he appears to have been depressed as late as January, though when we subsequently wrote for a few more particulars he maintained a sphynx-like silence. Perhaps he is waiting for his depression to pass off, after all.

The wild tales in the Sunday papers would not be worth attention were it not for the fact that they impress the unbotanical public with an erroneous idea of plants and in many cases deprive the reader of a sane attitude toward science and the outdoor world. Field and forest do not teem with poisonous plants and animals. They are far more peaceful and harmless than the streets of any city. If there is such a plant as those we have been describing we hereby offer ten thousand dollars for a living specimen. There are one or two people we want to introduce it to, and then we are going to make our fortune, and get the funds needed to make this magazine bigger, by exhibiting the thing, properly caged, at $1 a head.

NOTE *and* COMMENT

CULTIVATING THE BLUEBERRIES.—During the past twenty years, the blueberry has been changed from a wild inhabitant of peaty lands, very hard to domesticate, to a thriving denizen of our gardens. This has been brought about by a study of the plant's requirements and the discovery that the most important item in its well-being is an acid soil such as exists ready to hand in every bog. When the plant is set in the garden, the soil must be made acid by the use of peat, rotting hardwood sawdust, or other substances that will make and keep the soil acid. The experimenters, however, were not merely satisfied to grow just ordinary berries, but set about getting superior strains by offering cash for plants with unusually large fruit. In five years, more than a hundred bushes were found with fruits measuring five-eighths of an inch or more in diameter—larger than a copper penny. From these plants, and the 2,500 hybrids made from them, six plants have been selected for propagation and distribution. The species from which these superior plants have been derived is the common high-bush blueberry (*Vaccinium corymbosum*). A full account of the work has been published by Joseph J. White of Whitesbog, New Jersey, under the title of "Commercial Culture of Blueberries". This publication, curiously enough, is a nursery catalog but it is of interest to any who would like to grow these interesting plants and may be had free for the asking.

CALIFORNIA WILDFLOWERS.—Mrs. E. Unselt, writing from Mendocino County, California, mentions several of the attractive wildflowers as follows: First of all, there is what is known locally as a wild hyacinth. It has a few grasslike

leaves, and a flower stalk a foot or more high, with a cluster of lavender flowers that are individually somewhat like a hyacinth. Last spring these made a very poor showing on account of the dry winter that had preceded the spring; but when they do well the flower cluster consists of some twelve to twenty flowers. Somewhat later comes the purple brodiea. It is quite handsome when it grows well. The flowers are about like those of the star-of-Bethlehem (I mean *Ornithogallum umbellatum*), but are a bluish lavender, and there are twenty or more in an umbel. There is another flower that I think is really charming that I'm not sure of botanically, but belongs either to the Mariposa lilies or something closely related. It is known as cat's ears. It is a small, nodding, yellow flower, from one to several on a stalk. It has a brownish marking on the inside of the petals, and is hairy within. It's the quaintest little thing you ever saw. The adder's tongue is very common here. A neighbor tells me that there are acres of it on the hill back of their place. It's creamy, with the petals often showing yellow at the base. The natives persist in calling it the Easter lily. About the commonest flower we have is Iris missouriensis. It makes itself at home on all the cutover hillsides. The baby-blue-eyes (*Nemophila*) makes a great show in the spring. Its favorite place is the vineyards, where it blossoms and goes to seed before the spring cultivating. Another plant that does the same is cream cups (*Platystemon*, I believe). It is a sort of poppy. The dark blue lupines (mostly annuals) make a wonderful showing, too, especially when the California poppies grow among them. I've seen whole fields a mass of blue and gold. Another pretty effect is that of the popcorn flower (*Plagiobothrys*). I've read that the Spanish settlers used to call them nievetas, and that is a much better name, as the fields look as if covered by a light fall of snow. Another flower

that sometimes colors the fields is one that looks much like the portulaca. The flowers are a deep magenta. I imagine it must be much like the bitter root. *Trillium sessile* grows here, but is not so common as *T. ovatum*. Personally, I do not think it is as graceful as the ordinary trillium. It grows as tall as the common trillium ordinarily does, and the leaves are as large. They are also mottled with brown. The petals are one to one and one-half inches long, and about three-eighths of an inch wide; and to my way of thinking their narrowness is out of proportion to their length and makes the flower look stingy. Also, I think it is lacking in grace, being set so close to the leaves. I know that others think it is a beautiful flower.

BEE HABITS.—"The bees belonging to the genus *Andrena* may be called the harbingers of spring", writes Smith, a British mellitologist. On a warm sunny day the last of April, the air around the bright yellow aments of the willows is full of Andrenid bees. This is the largest genus of bees; about 600 species have been described in North America. A part of the species are vernal and fly only in the spring; and a part are autumnal and fly only in autumn. Many species visit for nectar and pollen only one kind of flower. In spring I have found only four species on the catkins of the willows and in autumn only four species on the inflorescence of the golden-rod. One other species restricts its visits to asters. In the Central States one species visits only the flowers of the spring beauty, another visits the violets alone, and a third confines its visits to the strawberry. When the bloom of these various plants fade, the bees die. A species which visits only one kind of flower is called monotropic; or oligotropic if it visits several closely related forms and polytropic when it visits a variety of flowers.—*From an article by John A. Lovell, in Maine Naturalist.*

ACID AND ROOT-GROWTH.—The time-honored method of rooting cuttings is to place them in a bed of moist sand. Now it is asserted that they root more readily if placed in an acid medium. Adherents of the sand method, however, may not be so far wrong for sands are usually acid, or at least not basic. It is said that the most refractory specimens root readily in acid soils. The first tests were made with soils moistened with water from peat bogs, but it was soon discovered that the important thing was the acid and that acetic acid, or vinegar, would do as well. The proportions suggested are three teaspoonfuls of vinegar to a quart of water. It now remains for propagators generally to try the new method and find out if it really works. There is an impression abroad that weak acids aid the germination of seeds also. Here is another inviting field for experiment.

PLANTS FROM LEAVES.—That a slip from a plant will take root and become a new and independent plant is familiar to everybody, but the fact that leaves may be induced to produce such plants is probably not so well known. Some leaves will produce roots but seem incapable of forming buds and so, of course, no new plant is possible. The classic example of a leaf that may be made to produce additional plants in this way is the life-plant or *Bryophyllum*, a tropical weed whose leaves need only to be pinned down on moist soil to develop whole families of plants on their margins. The rex begonia also has this habit. Among simpler plants the walking fern regularly roots at the tips of the leaves and derives its common name from this circumstance. A large number of tropical and greenhouse ferns have similar habits. The scales of lily bulbs, which are really the bases of the leaves, turn into new plants when placed in the right conditions. A writer in *Gardeners' Chronicle* mentions among other plants with this habit,

hyacinths, gloxinias, sansevieria, *Hoya*, and species of *Crassula* and *Cotyledon*. Cactus plants, especially those of the genus Opuntia, or prickly pears, are often supposed to produce new plants from the leaves, but the roundish sections commonly regarded as leaves are in reality stems which serve as leaves.

WILD CRAB-APPLES.—A subscriber in California writes: "I was very much interested in what Nell McMurray has to say of the crab-apple in your last issue. When I was a boy in Minnesota in the '70's and early '80's I used to delight in gathering the wild crab-apples. My mother used them for preserves and jellies and *we* found them delicious. She sometimes even used them for pies. We boys were fond of them raw after they had fallen and had been covered with snow for a month or more. But people say kids will eat anything. We often found specimens as large as the Siberian crab-apple. They lost much of their sour taste after being frozen."

VIOLA FIMBRIATULA.—Most violets choose moist soils so that the bunches we found growing on the bare open field on the hilltop seemed away from home. The plants were very short—only an inch or two high—and we nearly stepped on them before we saw them. They were so sturdy and downy they seemed made for cold weather. The short petioles are pubescent and the leaves above and below are downy. The short scapes are hairy, even the calyx is ciliate, and the three lower petals have white beards. It is a stemless violet, the numerous flowers and leaves crowding up form a dense rosette, each rosette having a place of its own. It is *Viola fimbriatula*, a common little thing, for it grew on every dry hill I visited later in the spring. It is strange that I never saw it before. Long ago I collected fifteen species of violets, but *fimbriatula* was not among them.

YELLOW BERRIES OF HOLLY.—I read your article in the January Botanist about plants with red fruit producing occasionally yellow fruit and as I had just the same day the magazine was received made an interesting "find" I am sending you specimens—yellow holly berries. There are two very fine old trees covered with these yellow berries and they stand in a grove of probably twenty-five trees, many of them twelve to fifteen inches in diameter and probably forty feet high, some without berries but most of them loaded with red berries. The grove is evidently a natural one but it has been protected. It stands beside a highway in Robeson County, North Carolina.—*H. A. Rankin, Hallsboro, N. C.* [A long time ago, a yellow fruited holly was described from Massachusetts as the variety *xanthocarpa,* but the form is a rare one. It has since been reported from Saluda, North Carolina, also. Recently another holly, *Ilex myrtifolia,* has been found with yellow fruit. This has been described with a considerable flourish as the form *Lowei.* Mr. Rankin's yellow fruits were noticeably smaller than the red-fruited specimens sent with them. If these are regularly smaller than ordinary holly berries, this would be a second distinguishing character.—*Ed.*]

THE GLADE MALLOW.—The glade mallow (*Napaea dioica*) is marked rare in the Manuals but the editor of this magazine found a large colony of it in full fruit last season, and can supply seeds to interested persons for the cost of postage. The plant has small and unattractive flowers, but since it is rare and the flowers are dioecious, students of plants and botanical gardens may like to grow it.

GROWTH OF SKUNK CABBAGE.—Few there are who pay attention to the humble skunk cabbage though it appears to have a number of attractive points. In spring its purple, yellow and green spathes are first of the wildflowers to push above the soil and thus may enjoy a short-lived dis-

tinction, but when the two great leaves appear, its slight popularity is over for the season. Those rare students who have investigated its habits through the rest of the year report several items of interest. Each season the plant produces two leaves and a spathe. These latter are not formed, as one might say, on the spur of the moment, but are provided for, nearly three years in advance. And even at that, it is said that many of the inflorescences are subsequently smothered by the developing leaves before they have had a chance to push through the watery soil. The plant grows only at the tip, but the stem never rises above the soil because it constantly pushes downward, being helped thereto by certain strong roots which, getting a hold deep in the earth, contract strongly. Stems with leafscars representing more than seventy seasons of growth have been reported.

Soaring Birds.—When a strong wind strikes a cliff, a considerable amount of air is deflected upward, forming a column or wall of air for a considerable distance above the top of the cliff. Such a mass of rising air is a favorite playground for birds which soar above it just as other birds do in the columns of warm air rising from the hot tropical lowlands. At Agattu Island in the western Alsutians where the sun very rarely shines—there is no record that anyone ever saw the sun there—but where the wind always blows, there is a cliff near the anchorage on and near which all sorts of birds abound. When the wind blows against this cliff, the air above is filled with birds, some merely flying back and forth, like the puffins, murres and guillemots, but others wheeling and soaring like hawks. Most conspicuous among these soaring birds are the geese, cormorants, and ravens, birds which ordinarily we never think of as indulging in diversions of this nature. The gulls, too, are very numerous, but as the gull is an expert balancer and glider it seems

only natural that he should be here.—*Austin H. Clark, in Scientific Monthly.*

FLIGHT OF INSECTS.—The common cabbage butterfly moves its wings at the rate of 540 strokes a minute, the sphingid moths at the rate of 4,320 beats a minute, the wasp at the rate of 6,600 beats per minute, the honey-bee at the rate of 11,400 beats per minute; while the wings of the common housefly vibrate at the rate of 19,800 beats per minute. Of all the insects, the larger dragon-flies, so common about the ponds and streams in which they live when young, are the swiftest on the wing. One sort of these (*Austrophlebia*) was timed by W. J. Tillyard, who found that it covered between eighty and ninety yards in three seconds which means that it was flying at the rate of nearly sixty miles an hour.

OWNERS OF COMPLETE SETS.—The list of those who own complete sets of this magazine is steadily nearing completion. Set 90 will mark the end of the list. A list of the owners of the first 64 sets was published in this magazine for August, 1922, and the owners of sets 65 to 75 are given in the magazine for 1924, pages 31, 77 and 162. To these we now add:

No. 76. Miss Sadie U. Moore, Oak Park, Ill.

No. 77. Herbert Durand, Bronxville, N. Y.

Since there are only fourteen more sets to be had, it would be a matter of wisdom for those who own partial sets to complete them if they can, for as soon as the last full set is disposed of, the price of the others will naturally advance rapidly. We may say in this connection that we cannot supply volumes 20 to 28 at any price, except in sets. Many of the early volumes are still in stock, but in some cases less than half a dozen volumes remain.

EDITORIAL

The naive way in which the general public views the naming of plants has again been emphasized by a prominent News Syndicate which explains to its readers that students of plants who chance upon a new species are in the habit of naming it after themselves. The idea probably arose from the fact that seedsmen and other growers of plants are fond of attaching their names to such new forms as originate with them. This, however, is far from the scientific naming of plants. In every catalog we pick up, we expect to find enthusiastic descriptions of "Whoosit's double-jointed, extra-early, turnip-rooted, improved mammoth succotash" and similar prizes, but these names are given for the purpose of selling the goods, not with the idea of giving the plants technical names. It is only when the grower attempts to name his species as the botanist names them, that trouble ensues. If he names a really new species for himself he commits an offense against good taste that no systematist would condone. It is not even regarded as quite ethical for the scientist to name plants for a member of his family, though this is occasionally done. When a botanist has a plant named in his honor, we may rest assured that somebody else named it. In this he is quite different from the grower of plants who usually names his "creations" after their creator.

In 1905 the International rules for naming plants, often known as the Vienna Rules, were adopted at a congress of botanists from 17 countries, by a vote of 133 to 36. Notwithstanding this overwhelming vote in favor of the rules, certain American Botanists—the very people who are sup-

posed to recognize a majority vote—refused to accept them and got out a nice little set of their own. This is the famous American Code. These latter rules have not worked as well as expected. The world has shown no disposition to adopt them and they are, in fact, slipping, for the time-honored reason that the tail cannot wag the dog. At this late day, therefore, adherents of this provincial code are asking for a new deal in which the acceptance of "duplicating binomials" such as *Sassafras sassafras* and *Lablab lablab*, and a revision of the "nomina conservanda" are conspicuous. In this connection it may be said that the object of any set of rules is not to determine priority, to secure justice for some dead-and-gone botanist, to provide personal advertisement for systematists, or to facilitate the juggling of names from one genus to another. The object is first and last to provide a system for naming plants that shall be as nearly unchanging as possible. To this end the Vienna Congress adopted a long list of nomina conservanda —names in common use that are not to be changed, even though earlier names are known. It is the refusal of a small number to recognize such conserved names that has made possible much of the changing of names in recent years. Since the adoption of the International rules, plant names have steadily increased in stability and it does not seem to us desirable that any change, by whomsoever advanced, should be tolerated if it will again let loose upon us a flood of new combinations in plant names. Beside stability, all other reasons advanced for changing names sink into insignificance.

BOOKS AND WRITERS

The war between science and bigotry goes merrily on. * * * The Tennessee House of Representatives recently voted overwhelmingly to prohibit the teaching of evolution in the common schools of the State. * * * And the American Association of University Professors retort, in a resolution, that "For any State to pass laws against the teaching of evolution is unconstitutional, as it is a direct infringement on free speech based on groundless fear and ignorance." * * * The Professors say further that they are opposed to the settling of scientific questions by popular vote instead of by investigators who know what they are talking about. * * * Nevertheless, this did not prevent Mercer University from dismissing Prof. Henry Fox for merely holding private opinions regarding the origin of living things. * * * One of his critics said, "After the professor has discussed the scientific evidence, he should then pick up a copy of the Bible and announce that the Bible is the final court of appeal." * * * It seems lucky for that particular critic that he was not discussing astronomy, wireless or electrons. * * * Wonder when the churchmen will try to stop the teaching that the world is round. * * * An eminent Illinois churchman has offered $1,000 to anybody who will prove to him that the world is not flat. * * * Sometimes we are disposed to think that the world does not move, after all. * * * In a new Laboratory Guide built on the New York State biology course, the student is directed to get some water and taste and smell it. * * * Is it possible the New Yorkers know so little about water that they have to go to school to find out what it looks and tastes like? * * * Andy Volstead ought to look into this. * * * Over in London the *Botanical Magazine* has just completed its 149th volume * * * It is probably the oldest botanical publication in the world. * * * We hope we can edit the *American Botanist* for the same length of time. * * * The Arboretum idea is be-

coming popular. * * * They are discussing one for the Nation in Washington and many smaller cities are making their own. * * * The public is beginning to distinguish trees and flowers from mere vegetation. * * * A new National Park in the Blue Ridge mountains of Virginia is alsc proposed. * * * The region is one of great scenic beauty and is within a days ride of forty million people. * * * Everybody ought to boost it. * * * The most important of our literary reviews runs a list of the new books published, under appropriate headings, but that one named "Science" is often vacant. * * * It is a rare event when a technical book on botany appears and still rarer when one designed for popular use occurs. * * * *Farm and Garden,* which suspended publication last year, appeared again in December. * * * It looks much thinner and paler than before, as if it had been through a long illness. * * * Had trouble with its circulation, we hear. * * * The high cost of production, that Nemesis which is always on the track of small publications, is responsible. * * * It is published by the Woman's Farm and Garden Association which has recently moved the office of publication from Chicago to New York. * * * The magazine deserves greater patronage. * * * The Conservation Committee of the Association has established a Scholarship in the botanical department of Vassar College. * * * The first holders of the Scholarship have published a report on "Native Plants of Dutchess County" [N. Y.]. * * * It is an ecological survey which lists the plants of different habitats under their technical and common names. * * * The Yale University Press has issued a volume on "Timbers of Tropical America" that costs ten dollars. * * * We have always understood that tropical woods are expensive! * * * The way scientific books have gone up in price gives little hope of popularizing science. * * * We noted another volume of 500 pages for $14. * * * One has

to have a fat pocket-book to patronize science nowadays. * * * The Editor's new book entitled "Practical Botany for High Schools" has appeared. * * * It is the regular botanical course with more attention than usual paid to the plants of the student's own region. * * * It is, however, made for the individual student and can be carried on by anybody without a teacher. * * * All who missed botany in school will find this decidedly helpful. * * * It has full directions for investigating the plants of one's own region and costs $1.10, postpaid. * * * Macmillan's announce a new book by Charles Chupp on "Vegetable Garden Diseases". * * * The same publishers are issuing another book by L. H. Bailey intended to take the place of the "Practical Garden Book". * * * It is to be called "The Gardener".

* * *

The bugs that are lying in wait for our specimens this spring will find a new Manual for their destruction lying in wait for them. Dr. E. P. Felt, New York's efficient State Entomologist, has issued a "Manual of Tree and Shrub Insects". In a way this is a truly depressing document. It describes so many bugs, beetles, worms, aphids, gall and scale insects that prey on trees that one wonders how any escape and grow to maturity. Fortunately Dr. Felt knows exactly what to put on each insect to discourage it and thus mixes considerable sunshine with the gloom. In general we poison chewing insects, smother sucking insects, and dig out the borers, but there is usually a choice of applications and the book tells all about them. There are four parts to the volume. The first discusses the structure and life histories of the insects, the second and third describe the kinds that injure shade, forest and ornamental plants, and the fourth gives a systematic account of the destructive species, with their characteristics and habits. The author's extended experience with these pests has given him a large

fund of interesting facts upon which he has drawn freely in discussing them. There are nearly 400 pages in the book and 156 illustrations. Numerous references to the literature of the subject are included. It is not too much to say that with this book in hand, anybody is equipped to protect his plants from their enemies. In addition, he may gain a great deal of information about insects in general. The book is published by the Macmillan Company, New York and costs $3.50.

* * *

"What do people think about as they are riding or walking out of doors," asks Stephen F. Hamblin in his book, "Man's Spiritual Contact With the Landscape". "They are not giving much thought to the wonder world about them," he says, "for they are wholly engrossed in the cares of business and think only of what they will see and do at the end of their journey." Thoreau had a very definite idea of what a walk should be and observes, "I am alarmed when it happens that I have walked into the woods bodily without getting there in spirit. What business have I in the woods if I am thinking of something out of the woods?" Some such sentiment seems to be in the mind of the present author who, in the 300 pages of his book has attempted to open our eyes to the beauty of nature throughout the year. The chapters begin in April and there is one for each month and some to spare, each prefaced by a suitable photograph. The text is cast in a somewhat more serious vein than are most nature-books and the author has supplemented his own work by quotations from the Bible and the poets. The book is an excellent specimen of the book-maker's art and comes from the press of Richard G. Badger, Boston. It is bound in boards and costs $2.50.

Man has been gardening for a long time, but a large part of his food still comes from the wild plants of field and wood. This is particularly true of such plants as the walnut, butternut, chestnut, hickorynut, beechnut, chinquapin, elderberry and wild crab. A long list of others might be made in which the fruit is still gathered in the wild state but which have also been introduced into cultivation. This would include the grape, raspberry, blackberry, huckleberry, cranberry and pecan. The cultivation of the last-mentioned species, however, has reached such proportions in recent years that H. P. Stuckey and E. L. Kyle have found it desirable to issue a book on the subject under the title "Pecan Growing". The pecan is a strictly American nut, in spite of the sidewalk merchant's "fresh imported pecans". The tree is a native of the Mississippi valley and adjacent country and extends northward as far as Central Illinois, in fact it was in this State that the tree was discovered. Formerly all the nuts came from wild trees and such nuts still come to market, but about 1882 a few trees of the better grade began to be grown and in 1900 the speculative era began in which extensive plantings were made, chiefly in the Gulf States. In the interval that has elapsed since then, a number of more desirable varieties have been discovered, the improvements consisting mostly in increased size, better flavor, or thinner shells. The "paper shells" have long been known in the wild and these, of course, are the only ones cultivated. The trees begin to bear the third or fourth year, but regular crops are not produced before about the eighth year. The trees live for more than a hundred years and, when in full bearing, yield from 200 to 500 pounds of nuts annually. Individual trees often do much better. One is on record which produced 1,060 pounds of nuts in one year and another which produced more than three-quarters of a ton in a single season. In 1919, more

than thirty-one million pounds of nuts were produced. The new book discusses everything that pertains to pecan culture—soil, propagation, pollination, orcharding, harvesting, marketing, insect and plant diseases, and uses. A description of all known varieties ends the book. The volume affords more information on the subject than can be found anywhere else and, of course, every grower will have to have a copy. It contains 230 pages, 12 plates and 33 illustrations in the text, and is published by the Macmillan Company, New York, at $3.00.

* * *

There have come to our desk, almost simultaneously, two new books of the same size and color, each of which bears the title of "A Text-book of General Botany". One is the product of six well-known botanists, namely, G. M. Smith, J. B. Overton, E. M. Gilbert, R. H. Denniston, G. S. Bryan and C. E. Allen, all of the University of Wisconsin, while the other is sponsored by R. M. Holman and W. W. Robbins of the University of California, though they name no fewer than forty others who have had some part in its making. Both books follow what might be described as the standard method of presenting the subject, beginning with more or less explanatory matter, followed by chapters on the organs of the flowering plants. The University of California book begins with the cell and continues through to fruit and seeds; the Wisconsin book goes as far as leaves and then considers the simpler plants before proceeding to a discussion of the flowers and fruits. The California book, however, discusses the simpler plants after fruits and thus evens matters up. Then both books take up the subject of evolution. Here the California book ends but the Wisconsin volume, though shorter by more than a hundred pages, has chapters on the distribution of plants, crop plants, forestry and kindred matters. Neither book has directions

for laboratory work or references to literature in which the student may find further aid in his investigations. It might be hastily assumed that with two books so near alike, there is little to distinguish one from the other, but this is incorrect. The Wisconsin book aims to make botany easy to beginning students and contains a minimum of technical terms; the California volume, on the other hand, is more than usually technical. Which is the better treatment is largely a matter of opinion. One is easier for the student, but the other unlocks a greater store of knowledge. The Wisconsin book is more profusely illustrated and both volumes contain a number of time-honored cuts whose appearance in a new text is always to be expected. It is easy to perceive that each book is intended primarily for the students in the University from which it emanates, but is offered to other institutions which have not yet produced their own texts. Any of the latter may well select one of these books. They are full and complete in all matters that the beginning student should know. There is no question but what an intelligent teacher with either book could conduct a profitable course. It is to be regretted, however, that more originality was not exercised in selecting the titles. There must be nearly a dozen "text-books of botany" already on the market. The book by Holman and Robbins is published by John Wiley & Sons, New York, and costs $4 net. The book by Smith, Overton et al. is published by the Macmillan Company, New York. The price is $3.50.

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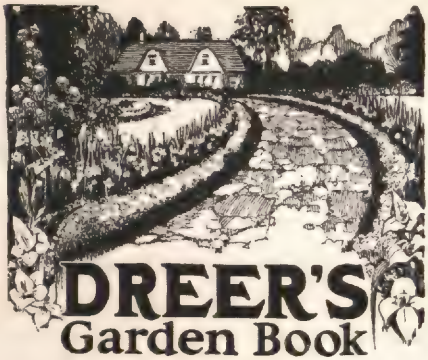

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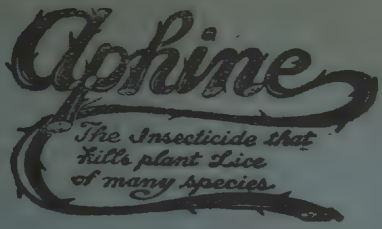

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THE VIRGINIA WILLOW—*Itea Virginica*

THE AMERICAN BOTANIST

VOL. XXXI. JULY, 1925. No. 3

O my garden! lying whitely in the moonlight and the dew,
Far across the restless ocean flies my yearning heart to you;
And I turn from storied castle, hoary fane, and ruined shrine,
To the dear, familiar pleasance where my own white lilies shine—
With a vague half-startled wonder if some night in Paradise,
From the battlements of Heaven I shall turn my longing eyes,
All the dim, resplendent spaces and the many stardrifts through,
To my garden, lying whitely in the moonlight and the dew.

JULIA C. R. DORR.

THE VIRGINIA WILLOW.

By WILLARD N. CLUTE

THE genus *Itea,* named from a Greek word meaning "willow," has one species in our South Atlantic States and four or five more in Asia. Our species, *Itea Virginica,* is known in the books as "Virginia willow," but it is not a conspicuous plant in spite of its racemes of white flowers, and can scarcely be said to have a common name at all.

As our frontispiece shows, *Itea Virginica* has a superficial resemblance to some of the heathworts, notably the species of *Clethra,* but it is really more closely related to the *Deutzias* and is usually placed with them in the Saxifragaceae. Some systematists, however, consider the species of *Itea* distinct enough to have a family of their own and they may occasionally be found in the Iteaceae.

Whatever called, *Itea Virginica* is an interesting little shrub, especially in early summer when it displays its fragrant white racemes. Although most abundant along

the Atlantic from Virginia south, it extends inland to southern Illinois. It is, however, hardier much farther north and is not infrequent in decorative plantings. Another species, *I. ilicifolia* from Central China, with holly-like foliage, may occasionally be seen in cultivation in this country.

Our illustration was made from a photograph taken in Florida by Walter M. Buswell.

PLANTS OF WOLF LAKE, INDIANA-ILLINOIS

By Donald C. Peattie.

IN the extreme northwestern corner of Indiana, lies a small lake about five square miles in area and not more than thirty feet in depth which is known as Wolf Lake. This is not to be confused with another body of water of the same name farther "down state." For nearly fifty years it has been a famous hunting ground for aquatic wild life. But though the birds of Wolf Lake have been repeatedly written of, the plants, which form one of the most remarkable assemblages of aquatics in the country, have not seen print, so far as I know, beyond an incomplete mimeographed list given to ecology students at the University of Chicago.

Wolf Lake is to me a strangely beautiful spot, though I am aware that many might not consider it so, for some persons require of a lake that it shall have a rugged or spectacular setting. The shores of Wolf Lake are very low and reedy; the prairies sweep levelly to its very marges, and the little lake lies wide-spread under the high western skies, fringed with acres of bending rice-grass and bulrushes and filled with flowering aquatics such as the water-lilies, water-star grass, eel-grass and pickerel-weed—a restful, sweet,

reedy place, full of life and a quiet beauty that does not tire.

Wolf Lake is part of what was once, in the times immediately following the retreat of the glaciers, a great shallow bay of Lake Chicago. Sand spits formed by the coastal currents first cut off a large segment of the bay, forming a landlocked body of water now known as Lake Calumet. The next sand spit formed a slightly smaller lake, Wolf Lake. Hyde Lake or Lake George came next, and finally, hardly more than a pond, Bear or Berry Lake. These sand spits may still easily be traced across the prairies today, partly by the low sandy ridges themselves and partly by the black oaks that invariably grow upon them. Connecting all these lakes (except Berry Lake) is the Grand Calumet, a sluggish little stream which formerly had two mouths. About seventy years ago, however, the dunes at Miller drifted across the eastern mouth and dammed up the waters into a currentless lagoon. The only mouth of the Calumet now is at South Chicago.

Hyde Lake or Lake George has largely been drained away by a canal. Berry Lake has been obliterated by the growth of the ugly factory districts of Indiana Harbor, its only aquatic plant of which a record stands being *Scirpus Eriophorum*. The flora of Lake Calumet is said to have undergone changes due both to dredging and to chemicals put into the water. Only Wolf Lake retains its original flora—a flora which, it is not too much to suppose, is nearly identical with that which it possessed in early post-glacial times, when, as I have shown elsewhere, the coastal plain plants from the Atlantic seaboard migrated along the shores of the Great Lakes. Lake Michigan now contains few aquatic plants; it is a wonderfully pure body of water, probably because storms do not permit most plants to maintain a foothold in its waters; but the warm, shallow, landlocked Wolf Lake has preserved a fascinating flora.

I do not know of another body of water of equal size that can boast such a list of aquatics. And the numbers of individual plants are astonishing. In many places rowing is practically impossible on account of the sargasso of floating vegetation. Properly to botanize Wolf Lake, a boat is indispensable. When you are well out into the middle of the lake, dip your oar and bring it up slowly. The mass of clinging weeds which comes up with it may at first look uniformly alike. But sort it, and it resolves itself into a splendid haul of aquatics. There is the horned pondweed (*Zannichelia palustris*), the two naiads (*Naias flexilis* and the rarer *N. guadalupensis*). The ditch moss (*Elodea canadensis*), which Dr. St. John tells us has no known male flowers, has been reported from Wolf Lake, but I found only *E. Nuttallii*.

And the pondweeds, what an assortment of them!—the handsome *Potamogeton natans*, with its floating leaves, and its close relatives *P. Americanus* and *P. Richardsonii*, and the introduced *P. crispus*. To complete the enumeration there are *P. amplifolius*, *P. lucens*, *P. zosterifolius*, *P. strictifolius*, *P. pectinatus*, *P. heterophyllus*, and *P. foliosus* var. *Niagarensis*.

To obtain the duckweeds, those tiniest of flowering plants, it is necessary to use a glass or net. In this way one may easily get quantities of *Spirodella polyrhiza*, *Lemna trisulca*, *Lemna perpusilla*, and *L. Minor*. It is but rarely, however, that a specimen of *Wolffia columbiana*, which floats beneath the surface, is dragged up.

Floating vegetation with dissected leaves is, as always, very common. In Wolf Lake are acres of *Myriophyllum exalbescens*, and *Utricularia vulgaris* var. *Americana*, the latter, an insectivorous plant supported on tiny bladders, which scatters a mantle of golden blossoms across the still surface of the water. Two water buttercups are occa-

sionally met with, *Ranunculus circinatus,* and *R. aquatilis,* var. *capillaceus.*

Steer for that waving mass of green on the eastern shore of the lake, and you will discover that it is several solid acres of *Typha latifolia,* or perhaps *T. angustifolia,* for both are present. Here where the water is deep, clear, and free from pondweeds and milfoil, we may look down and see the coiling curious stems of the eel grass (*Vallisneria Americana*) rising to the surface, its beautiful translucent ribbony leaves waving langorously, and the pollen of its male flowers floating with the wind, whipped into golden eddies on the surface of the lake. In such spots too grows the beautiful little water star-grass (*Heteranthera dubia*) its blossoms drifting daintily just at the surface.

The big pads of the white and pink water-lilies (*Nymphaea odorata* and *N. tuberosa*) are grouped in the deeper bays in long curving lines, and scattered among them grows the little water-shield (*Brasenia Schreberi*) and the two spatter-docks, (*Nymphozanthus advena* and *N. variegata*).

On one of my visits to the lake I met summer duck-hunters who told me that years ago the great lotus (*Nelumbo lutea*) had grown abundantly in Wolf Lake. I looked for it in vain, and there is reason to believe that commercial pickers have exterminated it. It is still found in the arms of the Calumet River, however. As a result of picking, the beautiful rose mallow (*Hibiscus Moscheutos*) is now, too, very rare.

Closer to the shore, in water two to four feet deep, grow acres of the wild rice (*Zizania aquatica* var. *interior*) whose seeds the hosts of water birds that frequent the lake so dearly love. *Phragmites communis* is as common as it is beautiful. But this zone is primarily the zone of bulrushes. *Scirpus validus, S. lineatus,* and *S. Americanus* are everywhere. Bur-reed (*Sparganium eurycarpum*), water plan-

tain (*Alisma Plantago-aquatica*), Arrowheads (*Sagittaria latifolia* and its forms, *hastata* and *gracilis*), pickerel weed (*Pontederia cordata*)—these are the lesser denizens of the great sweep of the bulrush margin. Among them the blue flag (*Iris versicolor*) waves its pretty blossoms, and the poisonous umbellifers (*Cicuta maculata, C. bulbifera, Sium suave,* and *Oxypolis rigidior*) exhibit in the emersed and immersed leaves the differences in lobing and dissection that attends the life of a leaf under water as contrasted with that of one in air.

Where the water is but two inches to a foot in depth comes the zone of a more low-growing vegetation, composed in large part of the sedge family. There one may find *Dulichium arundinaceum* dominant, accompanied by *Eleocharis interstincta, E. quadrangularis, E. caribea* (three coastal plain species) and the common little *E. obtusa,* as well as *Rhynchospora capillacea, Carex flava, C. Oeder* var. *pumila, Juncus brachycephalus, J. articulatus, J. scirpoides,* and the common but ever attractive *J. effusus* var. *solutus.*

A very few shrubs are found with their feet in the water in this zone. *Decodon verticillatus, Cephalanthus occidentalis, Salix pedicellaris* var. *hypoglauca* are all that I can record.

On what may pass for terra firma, though it is about as much water as land, comes the last zone—one which can certainly not pass for aquatic, but is rather more amphibious than anything else. On these swale-like marges are to be found the two curious little mud plants, *Utricularia resupinata* and *U. cornuta, Ludwigia palustris, Lythrum alatum, Scutellaria lateriflora, S. epilobiifolia, Asclepias incarnata, Solidaga graminifolia, Lobelia Kalmii, Hypericum Virginicum, Polygonum amphibium, P. Muhlenbergii, Seymeria macrophylla, Proserpinaca palustris, Eleocharis acicularis, Equisetum limosum,* and *Ophioglossum vulgatum.*

I have recorded here all the species of which I feel certain for the waters and immediate margins of Wolf Lake. It would not be surprising if more of the plants known in the waters of the Calumet River, and of Lake Calumet should eventually turn up in Wolf Lake. Some of those which have been collected in Lake Calumet and not in Wolf Lake are unusually interesting: *Potamogeton Illinoensis*, a local hybrid; *Mariscus mariscoides, Carex comosa, Epilobium molle, Didiplis linearis, Heracleum lanatum*, and *Megalodontia Beckii* that anomaly among Compositae, a true aquatic with dissected leaves, like water buttercup.

The Calumet River, whose flora is better known to me than that of Lake Calumet, contains several species not recorded from Wolf Lake that may yet turn up there. One must in this class record, *Zizania aquatica* var. *angustifolia, Sagittaria heterophylla* var. *angustifolia, Carex aquatilis, Carex alata, Ceratophyllum demersum, Ranunculus delphinifolius, Podostemum ceratophyllum, Callitriche palustris, Myriophyllum spicatum, Hippurus vulgaris, Samolus floribundus, Ilysanthes riparia, Utricularia intermedia, U. minor*, and *U. gibba*.

THE MEANINGS OF PLANT NAMES—XXIII

CAPRIFOLIACEAE

By Willard N. Clute

THE Caprifoliaceae comprise some three hundred species of woody plants, native to the Northern Hemisphere and the more elevated parts of the tropics. Many are noted for the beauty and fragrance of their flowers and hence have been extensively introduced into cultivation. Though the plants are sympetalous, they are close to the line that divides polypetalous from sympetalous plant families and there is noted a tendency to irregular corollas in the group. The fruits are nearly always juicy, and often edible. Many species are commonly designated as "honeysuckles" from an old English word meaning a plant from which honey can be sucked. In ancient parlance, however, any nectar-producing plant might be a honeysuckle and the clover and privet seem to have been frequently so called.

The characteristically honeysuckle genus is *Lonicera*, named for a certain Adam Lonitzer, a German herbalist of the time of Linnaeus. Originally, however, a number of the species were placed in the genus *Caprifolium* and from this circumstance the family name is derived. The name may be fairly translated as "goat-leaf" and may have been given to the plants from the idea that goats feed on them. In this case, there are many other genera as well deserving of the name. The so-called "bush-honeysuckles" are members of the genus *Diervilla* which commemorates N. Dierville, a French physician who is said to have discovered the original species in Canada and brought it to the attention of his countrymen. Parts of the genus are occasionally called *Weigelia* for Weigel a Swedish physician. The latter name is often retained as a common name.

To the Caprifoliaceae also belongs the little twin-flower or *Linnaea* named for the great Swedish botanist Carl von Linne or Linnaeus whose work in naming plants in the 16th century was of such importance as to gain for him the title of "The Father of Botany." Among insignificant genera is *Adoxa* which name, indeed, means obscure or insignificant.

Two genera in our region are named for their fruits. One, *Triosteum,* from the Greek for "three" and "bone," refers to the hard bony carpels; the other, *Symphoricarpus,* is a combination of three Greek words meaning in their order, "together," "to bear" and "fruit" and referring to the fruits which are commonly closely grouped on the slender branches.

Viburnum is an ancient classic name originally applied to a group of the Caprifoliaceae by Tournefort and retained by Linnaeus. According to some, the meaning of this name is obscure but Wood says it is from *viere* and means to tie. If this be true, the name scarcely fits the erect shrubs which bear it and one cannot help feeling that it should have been applied to the true honeysuckles since there are several twining vines in that group.

Last, but by no means least in the list of American genera comes that genus to which belongs the elder, that plant of many uses from pop-guns to pan-pipes and from pies to cordials. The name *Sambucus* is universally accepted for our plants though the derivation is somewhat hazy. The prevalent idea is that it is derived from *Sambuca,* an ancient musical instrument. This latter, however, was a stringed instrument. In any event, the name is a very old one and was used by the ancients as the name of the European elder tree, which, of course, is not like our own.

In many places the name of "woodbine" is applied to various species of honeysuckle in allusion to their habit of climbing over other vegetation, "woodbine" being only

another form of wood-bind. The word refers particularly to the European *Lonicera periclymenum*, but *Lonicera caprifolium* is called "American woodbine" as well as "Italian woodbine" and "fragrant woodbine," *L. dioica* the "small woodbine" and *L. hirsuta* the "rough woodbine." *Lonicera sempervirens* is simply "woodbine." Like "honeysuckle," the name is not very distinctive but is applied to various other plants, notably *Ampelopsis quinquefolia*.

While the application of honeysuckle to our plants is appropriate enough, some of the descriptive adjectives that accompany the term seem less applicable. It is difficult to understand, for instance, how the word "fly" came to be associated with so many species. The original of this name seems to be *Lonicera xylosteum*, of Europe but *L. oblongifolia* is the "swamp fly honeysuckle," *L. coerulea* is the "bush fly honeysuckle" and "mountain fly honeysuckle," *L. Canadensis* is "American fly Honeysuckle" and *L. tartarica* the "garden fly honeysuckle." It is suggested that the word, "fly," was originally *vlai* or *vly*, and itself a contraction of *valley*. *Vlai* is a Dutch name for a marshy place that often dries up in summer and the "fly honeysuckles" are therefore the species that inhabit the vlais.

Of the "fly honeysuckles" just named, *L. coerulea* is also known as "sweet-berry honeysuckle," a name of obvious derivation. *L. tartarica* is more familiar to us as the "Tartarian honeysuckle" or "bush honeysuckle," sometimes as "tartarian bush honeysuckle." The first name is for its place of origin, but this can scarcely be considered *the* bush honeysuckle, for our little *Diervilla lonicera* seems by rights entitled to this designation. *Lonicera Canadensis* is the "vernal honeysuckle" because of its early blooming, but "medaddy bush" has no significance to me and I am unable to find the word in any dictionary to which I have access.

Many other honeysuckle names applied in the genus *Lonicera* are of too obvious a derivation to need explanation.

Thus *L. flava* is the "yellow honeysuckle," *L. hirsuta* the "hairy honeysuckle," and *L. Japonica* the "Japanese or Chinese honeysuckle." The red blossoms of *L. sempervirens* make this the "scarlet or coral honeysuckle," while the tubular flowers account for the name of "trumpet honeysuckle." *Lonicera caprifolium,* though called "American Honeysuckle," is also known as "Italian Honeysuckle" for its place of origin. The species best entitled to the latter name, however, seems to be *L. Italica,* judging from its specific appellation. From the appearance of its leaves, united at base around the stem which thus appears to be passing through them, our species is known as "perfoliate honeysuckle" and the fact that it has many other names indicates that it is plentiful. This is confirmed by the name of "common honeysuckle."

The somewhat sprawling *L. dioica* is, by comparison with other species, the "small honeysuckle," and the appearance of the branches makes "limber honeysuckle" appropriate. The pale yellow flowers account for "yellow honeysuckle" and the leaves covered with whitish bloom make it "glaucous honeysuckle."

It is a relief to turn from this array of honeysuckles to the genus *Sambucus* which contains our familiar elder. Although all species of elder bear berries, the real "elderberry" is, by common consent, *Sambucus Canadensis.* Several other names of similar import distinguish this shrub, among them "common elder," "black-berried elder," "American elder," and "sweet elder." "Elder-blow" refers to the conspicuous clusters of white flowers. Every country boy, at least, knows the virtues of elder stems with large soft pith which make them seem designed by nature for popguns, squirt guns, and more or less musical instruments. Very anciently the European elder (*S. nigra*) was called on this account "bore tree" and this name as well as several others of similar meaning have been transferred to our

species. "Bottery-tree" which is the same as "bore-tree" has been used for *S. Canadensis*, while "bourtry" and "boor-tree" are commonly used for *S. racemosa*. The various spellings indicate that some who use these names are entirely unacquainted with their derivation. *Sambucus racemosa* bears brilliant red fruits in June and is naturally the "red elderberry," "scarlet elder," and "red-berried elder," while "mountain elder" refers to its habitat along mountain streams and along dripping cliffs. It is often called "poison elder," though this reputation is not deserved. The berries are far from palatable, as our tastes go, but they are greedily eaten by birds of many species. The word, "elder," is a very ancient term which seems always to have been applied to the plants which now bear it. Indeed, the elder was regarded as under the protection of the fairies or elves and it is not unlikely that eller-tree or elf tree was the original name.

Somewhat closely related to the elder, but with fruits dry and insipid, come the snowberries and coral berries of the genus *Symphoricarpus*. The western *S. occidentalis* is "wolf-berry," "stagberry," "quail-berry" and "partridge berry" although none of the animals mentioned appear to fancy the fruit. "Buck-brush" and "badger-brush," however, echo the idea expressed in the other names. It may be possible that the plants are so called because they form coverts for various animals. "June-berry" is doubtless due to the failure or ignorance to distinguish between common plants.

A second "buck-brush" is the red-fruited *S. orbiculatus* which is also called "turkey-berry" and "snap-berry." In our gardens it is better known as "Indian currant," "coral-berry," "red wax-berry" and "red snowberry" if one can imagine red snow. The real "snowberry" is *S. racemosus* or its variety *laevigatus*, whose snow-white fruits are among the conspicuous objects of autumn and early winter. It is

also "snowdrop-berry" and "wax-berry" and, due to a misconception through ignorance, is "canterbury." Perhaps the name of "egg-plant" refers to the fruits like small white eggs. The red-fruited species seems to have monopolized the name of "snap-berry" but it would seem to be more appropriately applied to this species. Few children can resist the temptation to squeeze the berries for the fun of hearing them pop.

The horse-gentians belong to the genus *Triosteum*. The species are not at all gentian-like in either form or flower, but since the plants have been used in medicine the name has probably been transferred from the true gentians to these. The descriptive adjective, "horse," seems to refer merely to size. The "common horse gentian" is *Triosteum perfoliatum* the "orange horse gentian" is *T. aurantiacum* and the "yellow horse gentian" is *T. angustifolium*. The common species has several other names by virtue of being better known and reputed medicinal. "Wild ipecac" and "wood ipecac" confirm its reputation for healing, as do also "feverwort" and "horse-ginseng," the last, of course, a contribution of ignorance in lieu of "horse gentian." "Genson" is another application of the same nature and "white gentian" a further confusion of this with the true gentians. Our plant is also known as "wild coffee" and "tinker's weed" both, probably, fanciful names. The name of "life-of-man" and "gravel weed," applied to *Diervilla lonicera*, evidently hint at medicinal properties in a related species. This latter plant is commonly and most appropriately known as "bush honeysuckle."

The twin-flower (*Linnaea borealis*) encircles the globe in high northern latitudes, but the species-splitters have attached the varietal name, *Americana*, to our form of the plant. It shares with its European analogue, however, such common names as "ground-vine," "deer-vine," "two-eye berry" and "twin sisters." The last one as well as

"twin-flower" refers to the fact that the flowers are borne in pairs on the common stem. The name of "cinnamon vine" is clearly misapplied while "eglantine" is more properly associated with a common wild rose, though Milton appears to have used it for some kind of honeysuckle. Our plant scarcely merits the name.

In our north-eastern states, there are at least a dozen species of *Viburnum* and, as usual in a genus as large and variable, there is no generic common name to fit them all. For the most part they are known as "arrow-woods" though a few seem never to be so called. Several others are usually known as "withe-rods." Both names refer to the straight slender stems which may be used for the shafts of arrows or for tying. Since the word "Viburnum" was originally used in connection with some material used for tying, the name of the genus ought by rights to be "wythe-rods," but "arrow-woods" have the preference which shows, again, that there is no accounting for tastes in common names. *Viburnum pubescens* is the "downy arrow-wood" and *V. dentatum* is not only "arrow-wood" but "wythe-rod," "wythe-wood" and "mealy-tree" as well, the last name probably referring to the fruits. Another "wythe-rod" is *V. cassinoides* whose specific name indicates that it has been confused with one of the hollies, the cassina-bush (*Ilex cassine*), from which the famous black drink of the Indians was made. The name of "Appalachian tea," "tea-berry" and "false Paraguay tea" thus become intelligible. The fruits are also called "wild raisins" but the term is more appropriately applied to other species of the genus. The "maple-leaved arrow-wood" is *V. acerifolium*. It is better known as "dockmackie" though what "dockmackie" signifies, nobody seems to know. It is also called "maple-leaved guelder rose" from a fancied resemblance to the true "guelder rose" (*V. opulus*), and "squash berry" which is

better applied to another species. *Viburnum molle* is the "soft arrow-wood" and "poison haw" in spite of the fact that the fruits are not poisonous. It is known as "black alder" through a confusion of the plant with species of *Alnus* better deserving of the name.

Viburnum nudum is the "naked wythe-rod." It is also "possum haw" from its resemblance to a species regarded as the true "possum haw" (*Ilex glabra*). Doubtless "poison haw" applied to *V. molle* is simply a misunderstanding of "possum haw." "Bilberry" for *N. nudum* is a misnomer from a species of huckleberry and "shawnee haw" is of no significance unless, like *V. cassinoides*, it refers to the famous spring drink of the Indians.

Viburnum lantana is the "European wayfaring tree," so called because the stems bend over and root at the tips in the manner of our walking fern and thus may be said to move along. Ignorance has changed the name to "wayfaring man's tree" and robbed it of its significance. Our American plant is often regarded as identical with the European but later manuals make it a separate species as *V. alnifolium*. It is often known as "American wayfaring tree" but American fancy and ingenuity has gone farther and it is also known as "hobble-bush," "witch-hobble," "trip toes," "tangle legs," "tangle foot" and "devil's shoestrings," in further confirmation of its power to trip up the careless wayfarer. The name of "wild hydrangea" is very suggestive, for the broad flat clusters of flowers are much like those of the hydrangea even to the sterile marginal flowers. It is called "dog-berry" and therefore "dogwood," doubtless in reference to the large and supposedly unpalatable fruits, but when the latter are ripe they are by no means tasteless. "Moose-wood," "moose-berry" and "moose-bush" may indicate that moose feed on it.

A viburnum with acid fruit is the "cranberry tree" (*V. opulus*) or *V. opulus* var. *Americana* if we regard our spe-

cies as distinct from that of Europe. It is from the European form that the "snowball tree" or "guelder rose" of our gardens is derived. The large globular clusters of sterile flowers have been produced by inducing all the flowers in the cluster to become sterile. The acid fruits may be used in the place of the true cranberry as is indicated by such names as "high cranberry," "high-bush cranberry," and probably "squaw-bush." Other references to the fruit are "grouse-berry" and "cherry-wood." The flowers and fruits resemble somewhat those of *V. alnifolia,* hence such names as "witch hopple," and "witch hobble." "Whitten tree" is said to be literally whiten tree "alluding to the white under surface of the leaves"—but the under surfaces are not white! "Gattan tree," "gaiter tree" and "gatteridge tree" come to us in a roundabout way through the Anglo-Saxon and are said to mean "goat-tree," which, as we have seen, *Caprifolium* also means. "Gadrise" is said to refer to coppice or small branches cut for burning. "Wild guelder rose," "snowball" and "pincushion tree" refer to the flower-clusters while "marsh elder," and "dog elder" have resulted from confusing this plant with the common elder, or perhaps to distinguish our plant from the elder, which does not favor places as wet as does the *Viburnum.* It is likely that "dog-elder" and "dog rowan-tree" allude to the unpalatable raw fruits. "Pimbina" is probably an Indian name for the plant. It does not appear in any of the common dictionaries. The species has some reputation in medicine and is known as "cramp bark." Guelder, gelder, or gueldres rose, as the name is variously spelled, refers to the province of Gelderland in Holland which is reputed to have been the original home of this form.

Viburnum pauciflorum is another "pimbina" and also "squash-berry." Two other common species in eastern America are so much alike that they are seldom distinguished

by the general public though easily separated by the plant student, and we find them, therefore, sharing the same common names. Both are "black haw," "sheep-berry" and "nanny-berry." One, *Viburnum prunifolium*, is also "sloe" and "stag-bush" while the other *V. Lentago*, is, in addition, "nanny-bush," "nanny-plum," and "tea plant." Haws are apple-like fruits, yet the plum-like fruits of the *Viburnums* have been confused with them. In a similar way they have been confused with the berries of the grape and called "wild raisins." The connection of these plants with sheep is not clear. The bark is used in medicine hence "tea-plant." "Sweet-berry" sounds to me much like "sheep-berry" but "sweet viburnum" doubtless alludes to the fairly palatable fruits. There seems to be no reason, however, for calling this plant "black-thorn," except that the fruits happen to be black.

Of the Caprifoliaceae in our region there remains only *Adoxa moschatellina* a little plant of Europe occasionally found as an escape on this side of the water. Its specific name indicates that it has a musk-like odor and this is borne out by the common names of "musk," "musk-root," "musk crowfoot" and "moschatel." "Hollow root" and "bulbous fumitory" refer to the shape of the underground parts. The generic name signifies insignificance and the plant well merits the name.

POPULAR HANDBOOKS OF THE UNITED STATES FLORA

IN the April issue of the *American Botanist*, there was published a list of the manuals of the United States flora. This naturally omitted the volumes which, though complete in themselves, were concerned with only a section of the flora in the region covered. There were also omitted the "popular" guides to the more conspicuous plants. Since the volumes omitted find great popularity with the botanizer, the general reader, and others who are interested chiefly in the showy wildflowers, it seems desirable to give a list of these also, as a sort of companion list to that compiled by Professor Conard.

Readers who note errors or omissions in the present list are invited to send in corrections. Like Professor Conard, we have not attempted to include the great array of State and local floras. These latter, however, are quite worth listing and we shall be glad to publish such a list if somebody can be found who will undertake its compilation. Numbers in the present list refer to the divisions outlined on the accompanying map.

GENERAL WORKS.

Apgar's Shrubs of the United States. Am. Book Co.

Sargent's Manual of the Trees of North America.

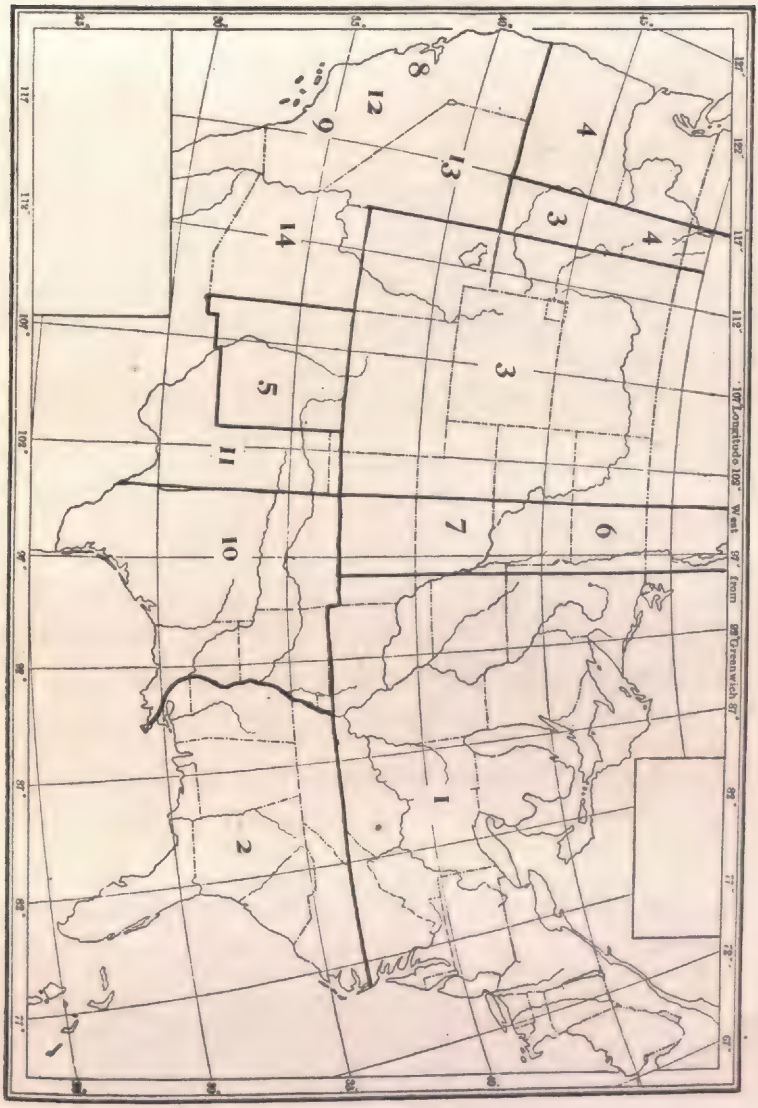
Clute's Fern Allies of North America. Stokes. 1905. Out of print.

Underwood's Our Native Ferns and their Allies. 6th Ed. Holt. 1900. Out of Print.

DIVISION 1.

Beecroft's Who's Who among the Wildflowers. Moffat, Yard & Co. 1910. Out of print.

Creevy's Harper's Guide to the Wildflowers. Harpers. 1912.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Dana's How to Know the Wildflowers. Scribners.

Keeler's Our Early Wildflowers. Scribners. 1916.

Keeler's Wayside Flowers of Summer. Scribners. 1917.

Lounsberry's Guide to the Wildflowers. Stokes. 1899. Out of print.

Matthews' Field-book of American Wildflowers. Putnams. 1902.

Gray's Field, Forest, and Garden Botany. Am. Book Co.

Peterson's How to Know Wild Fruits. Macmillan, 1923.

Reed's Wildflowers East of the Rockies. Doubleday, Page. 1910.

Stack's Wildflowers Every Child Should Know. Doubleday, Page. 1909.

Stevens' An Illustrated Guide to the Flowering Plants of the Middle Atlantic and New England States. Dodd, Mead. 1910.

Walton's Flower Finder. Lippincott. 1914.

Walton's Practical Guide to the Wildflowers and Fruits. Lippincott. 1909.

Wood's Botanist and Florist. Am. Book Co.

Apgar's Trees of the Northern United States. Am. Book Co.

Collins and Preston's Key to the Trees. Holt. 1912.

Emerson and Weed's Our Trees; How to Know Them. 5th Ed. Lippincott. 1918.

Keeler's Our Northern Trees. Scribners. 1900.

Lounsberry's Guide to the Trees. 2d ed. Stokes. 1900.

Newhall's Trees of Northeastern America. Putnams. 1890.

Matthews' Field-book of American Trees and Shrubs. Putnams.

Schaffner's Field Manual of the Trees. Adams & Co. 1922.

Keeler's Our Northern Shrubs. Scribners. 1903.

Beecroft's Who's Who among the Ferns. Moffat, Yard. 1910. Out of print.

Clute's Our Ferns in their Haunts. Stokes. 1901.

Dodge's Ferns and Fern Allies of New England. Clute 1896.

Eastman's New England Ferns and their Common Allies. Houghton, Mifflin. Out of print.

Parsons' How to know the Ferns. Scribners. 1899.

Tilton's Fern Lovers' Companion. Little, Brown & Co. 1922.

Waters' Ferns. Holt. 1903.

Dunham's How to Know the Mosses. Houghton, Mifflin. 1916.

DIVISION 2.

Lounsberry's Southern Wildflowers and Trees. Stokes. 1910.

Small's Ferns of Tropical Florida. Author. 1918.

DIVISION 3.

Nelson's Spring Flora of the Intermontane States. Ginn. 1912.

Brown's Alpine Flora of the Canadian Rockies. Putnams.

Henshaw's Mountain Wildflowers of America. Ginn. 1916.

Hawkins' Trees and Shrubs of Yellowstone National Park. Author. 1924.

DIVISION 4.

Frye and Rigg's Elementary Flora of the Northwest. Am. Book Co.

DIVISIONS 8, 9 and 12.

Parsons' Wildflowers of California. Cunningham, Curtis & Welch. Revised ed. 1909.

Saunders' Western Flower Guide. Doubleday, Page.

Eastwood's Handbook of the Trees of California. Calif. Acad. Sci. 1905. Out of print.

DIVISIONS 5, 11 and 14

Armstrong's Fieldbook of Western Wildflowers. Put nams. 1915.

DIVISION 10.

Schulz's 500 Plants of San Antonio and Vicinity. Author.

CODES OF NOMENCLATURE AND BOTANICAL CONGRESSES

HERBERT C. HANSON.

IT has been found that when students try to familiarize themselves with botanical codes and congresses they encounter considerable difficulty because the literature regarding them has not been assembled and even the references are not readily available. In order to make this study less difficult a summary and brief bibliography have been prepared. No attempt is made to describe or to explain each code in detail. Only some of the outstanding topics are mentioned. References are given so that each code may be studied at first-hand. That nomenclature is as alive, or even more so, as it was thirty years ago is readily seen when botanical literature (see especially the *Journal of Botany* for 1922) is examined.

The need for a botanical code of nomenclature is excellently stated in the introduction to the first edition of Britton and Brown's "Illustrated Flora": "Some species have had from 10 to 20 different names, and, worse still, different plants have often had the same name. For about 200,000 known species of plants there are not fewer than 700,000 recorded names. Such a chaotic condition of nomenclature is not only extremely unscientific, burdensome and confusing in itself, but the difficulty and uncertainty of identification which it causes in the comparative study of plants must make it, so long as it continues, a serious and constant obstruction in the path of botanical inquiry." (p. viii)

LINNAEUS, in "Philosophia Botanica," 1751, made the earliest definite formulation of nomenclatorial rules. These dealt almost entirely with generic names.

PARIS CODE, 1867. A. DeCandolle presented to the International Botanical Congress at Paris in 1867, a system of rules which he had formulated at the request of the International Congress of Botanists that met in London in 1866. The rules consist of general considerations and leading principles; the designations, nature, and relationships of the various groups, as order, genus and species; and the manner of designating each group. The laws were adopted "all but unanimously, and with manifest satisfaction, by about a hundred botanists of all countries." No date, however, was set as a starting point for the application of the principle of priority. This code is very important because it formed the basis of later rules. It was published in book form in French and translated into English.

References: Candolle, Alphonse de. Laws of botanical nomenclature adopted by the International Botanical Congress held at Paris in 1867. tr. from the French. 72-100 pp. London, 1868. See also; Am. Journ. Sci. and Arts 46: 63-77. 1868.

INTERNATIONAL BOTANICAL CONGRESS, GENOA, 1892. The publication of O. Kuntze's "Revisio Generum Plantarum," in 1891, was followed by considerable discussion on nomenclature among systematic botanists of the world. This interest reached a climax at the Genoa meeting where the Paris rules were adopted in part and an international committee on nomenclature, consisting of 30 members, was chosen. In a short time after the meeting the committee dwindled to 2 members and nothing was accomplished.

Reference: Pound, R. The Vienna propositions. Am. Nat. 27: 823-828. 1893.

ROCHESTER CODE, 1892. The Botanical Club of the American Association for the Advancement of Science, meeting in Rochester, N. Y., in August, 1892, adopted the Paris Code of 1867 except where it conflicted with eight rules that were adopted. The more important of these were the following.

1. "Priority of publication is to be regarded as the fundamental principle of botanical nomenclature."

2. "The botanical nomenclature of both genera and species is to begin with the publication of the first edition of Linnaeus 'Species Plantarum' in 1753."

3. "The publication of a generic name, or a binomial, invalidates the use of the same name for any subsequently published genus or species respectively."

4. "Publication of a species consists only (1) in the distribution of a printed description of the species named; (2) in the publishing of a binomial, with reference, to a previously published species as a type."

Reference: Rules of botanical nomenclature. Am. Nat. 26: 823-828. 1892. Britton, N. L., and A. Brown, "Illustrated Flora." Ed. 1., pp. viii-x.

MADISON BOTANICAL CONGRESS, 1893. This congress was held in August at Madison, Wisconsin, in connection with the first meeting of Section G of the American Association for the Advancement of Science. Nothing important was done in regard to nomenclature. N. L. Britton presented a paper showing the confusion that existed in nomenclature at this time, especially in regard to the date for the beginning of botanical nomenclature. Some botanists believed in going back before the time of Linnaeus, some believed in starting with Linnaeus' "Systemae Naturae" in 1735, others with "Species Plantarum" in 1753, others with "Genera Plantarum" in 1737, and still others who believed in selecting a more recent date.

Reference: Bessey, C. E. Botany at the Madison meetings. Am. Nat. 27: 823-828. 1893.

INTERNATIONAL BOTANICAL CONGRESS, PARIS, 1900. At this meeting it was decided that international congresses in botany be held every five years. The congress "declared itself incompetent to revise the laws of nomenclature," but appointed a committee to draw up suggestions for the next international congress, to be held at Vienna in 1905.

Reference: The International Botanical Congress. Bot. Gaz. 30: 403-405. 1900.

PHILADELPHIA CODE, 1904. A nomenclature commission of the Botanical Club of the American Association for the Advancement of Science "recommend and propose also to move in the Vienna Congress of 1905, that, in accordance with the provisions of the committee on organization of the Congress of 1905, the code of laws of 1867 be amended by the abandonment of all its articles and the substitution of the appended code" which was adopted by the committee. It emphasizes the same features as the Rochester Code, but is more complete and contains further modifications of the Paris Code.

Reference: Code of botanical nomenclature. Bull. Torr. Bot. Club. 31: 240-261. 1904.

VIENNA CODE, 1905. A complete set of rules, based upon the Paris Code was drawn up and adopted by the International Botanical Congress that met in Vienna in 1905. A few of the more important rules are given below.

Article 19. "Botanical nomenclature begins with the 'Species Plantarum' of Linnaeus, ed. 1 (1753), for all groups of vascular plants. It is agreed to associate genera, the names of which appear in this work, with the descriptions given of them in the 'Genera Plantarum,' ed. 5, (1754)."

Article 20. "However, to avoid disadvantageous changes in the nomenclature of genera by the strict application of the rules of nomenclature—and especially of the principle of priority starting from 1753—the rules provide a list of names which must be retained in all cases. These names are by preference those which have come into general use in the fifty years following their publication, or which have been used in monographs and important floristic (floristiques) works up to the year 1890. The list of these names forms an appendix to the rules of nomenclature." Article 36. "On and after January 1, 1908, the publication of names of new groups will be valid only when they are accompanied by a Latin diagnosis."

References: International rules for botanical nomenclature. Journ. Bot. 44: Supplement 2, pp. 1-23. 1906. Briquet, John. "Regles Internationales de la Nomenclature Botanique." pp. 99, Jena, 1906, in French, English, and German.

AMERICAN CODE OF BOTANICAL NOMENCLATURE, 1907. The Nomenclature Commission of the Botanical Club of the American Association for the Advancement of Science recommended certain amendments to the Philadelphia Code and that this amended code be used instead of the Vienna Code. The chief points of difference between the Vienna (International) Code and the American Code are the following.

1. The American Code recognizes the principle of establishing and maintaining many names by the method of types which the Vienna Code fails to do.

2. The Vienna Code permits the use of many names contrary to the principle of priority. The American Code insists upon priority.

3. The American Code states emphatically that a name should be rejected when one plant has already been given

that name (homonyms). The Vienna Code is quite mild on this subject.

4. The Vienna Code calls for a Latin diagnosis to accompany the descriptions of new species published after January 1, 1908. The American Commission regards this rule as unnecessary, unwise, and arbitrary; and the American Code does not specify which language should be used.

Some of the users of the American Code are the New York Botanical Garden, the United States National Herbarium, and the United States Department of Agriculture. The Vienna Code forms the basis for the nomenclature in Gray's Manual of Botany, Coulter and Nelson's New Manual of Rocky Mountain Botany, and Frye and Rigg's Northwest Flora.

Reference: American code of botanical nomenclature. Bull. Torr. Bot. Club. 34: 167-178. 1907.

BRUSSELS INTERNATIONAL BOTANICAL CONGRESS, 1910. This congress was held from May 14 to May 22 at Brussels, Belgium. There was almost complete unanimity in the expression of opinion in favor of extensive lists of *genera conservanda.* A motion to strike out the clause requiring a Latin diagnosis of new genera and species as provided for in the Vienna Code was defeated. Certain dates were adopted as starting points of special groups as given below.

Myxomycetes: Linnaeus, "Species Plantarum," 1753.

Fungi: Fries, "Syst. Myc.," 1821-1832, except for the Uredinales, Ustilaginales, and Gasteromycetes, which start with Persoon's "Synopsis," 1801.

Algae: Gomont, "Nostocaceae homocysteae," 1892-1893. Bornet et Flahault, "Nostocaceae Heterocysteae," 1886-1888. Ralfs, "British Desmidiaceae," 1848. Hirn, "Oedogoniaceae," 1900. Linnaeus, "Species Plantarum," 1753, for all other algae except the Chroococaceae.

Lichens: Linnaeus, "Species Plantarum," 1753.

Bryophytes: Hedwig, "Species muscorum," 1801-1830, for mosses. Linnaeus, "Species Plantarum," 1753, for liverworts.

Reference: The botanical congress at Brussels. Bot. Gaz. 50: 220-225. 1910.

SWEETER THAN SUGAR

FROM the desert regions of Eastern Paraguay comes a plant containing a substance nearly two hundred times as sweet as cane sugar. American scientists are experimenting to see whether its saccharine properties may not be valuable in modern diet.

The plant belongs to the family of composites, of which the sunflower and daisy are familiar representatives. Its scientific name is *Stevia rebaudiana.*

"The sweetness which it contains is not a sugar, but a glucosid somewhat similar to that found in the root of licorice. The leaves are dried and ground up, and a pinch of them is added to anything that requires sweetening; or they may be soaked in water and a sweet liquor prepared. One of the most valuable qualities of this liquid is that it does not ferment, as a syrup does. It might therefore be particularly useful in hot weather, when sugar solutions ferment quickly.

"The possible uses of such a plant as this are more or less obvious. It will particularly interest sufferers from diabetes, promising to furnish them with a sweetening that has none of the harmful properties of sugar.

"Its non-fermentability may be of value commercially, as in the preparation of sweetened beverages. It would also be of value, from this point of view, because it would not tend to favor the growth of bacteria in the mouth.

"The introduction to science of this rare plant is due to the veteran Paraguayan botanist, Dr. Moses S. Bertoni, who first heard of it from Indians about 1887, and sought it for many years until in 1899 he finally received from a friend a little packet of broken leaves, stems, and flowers, from which he was able to make the first description of it.

"Four years later a Catholic priest succeeded in getting a single live plant and sent it to Dr. Bertoni, who grew it and has in later years been able to furnish specimens to other persons interested. The Office of Foreign Seed and Plant Introduction of the United States Department of Agriculture, Washington, D. C., recently secured a packet of seeds, from which it has grown 800 plants to distribute to experimenters in the United States.—*From an article by Paul Popenoe, in Good Health.*

PARASITIC BEES.—So much has been written about the diligence of bees that their industry has become proverbial. It is then with no small degree of surprise and perhaps mild satisfaction, such is human nature, that the student of mellitology learns that there are genera which have given up making nests and storing supplies of floral food and which live wholly, as regards brood-rearing, at the expense of their neighbors. They lie in wait for an opportunity, when the rightful owner of the nest is absent, to steal into the burrow and lay an egg on the side of the ball of bee-bread. They are called cockoo-bees, guest-bees, brood-parasites or inquilines; while the bees at whose expense their young are reared are known as host-bees. The guest-bees are often closely allied in structural characters to their hosts, from which, during past time they seem to have been derived. The false bumblebees live in the nests of bumblebees and may very easily be mistaken for them; indeed they are regarded as bumblebees by most persons.—*From an article in Maine Naturalist by John Lovell.*

NOTE *and* COMMENT

GOATSBEARD.—The goatsbeard (*Tragopogon pratensis*) is commonly known as "John-go-to-bed-at-noon" from its habit of closing its flower-heads promptly at twelve o'clock. Among other names which allude to the same idea are "noon-flower" and "noon-tide." All the books that mention the plant at all refer to its habit of closing in the middle of the day. But this is not always true. Occasionally the flowerheads may be found open at other times. During the last week in May, thousands of the flower-heads in the vicinity of Chicago, were open as late as five o'clock in the afternoon. It is commonly supposed that the flowers close at mid-day on account of the heat, but if this is so, the reverse is not true for the flowers are not displayed again when the air becomes cooler. After they have once closed for the day, they remain closed no matter how cool the air becomes. In the early morning, the plant spreads its rays again. Those which were found open late in the day were probably specimens that had remained open, though the reason they did so is not apparent. The temperature, however, was very low at the time with a strong wind blowing and an occasional snowflake. Although the goatsbeard is a familiar and conspicuous weed in many places, the popular manuals seldom mention it, and it is not listed at all in the older manuals.

VARYING COLOR.—Elsewhere in this issue, mention is made of the varying colors of the sand phlox (*Phlox bifida*). This, however, is only one of the puzzles confronting the student of flower-color. White flowers, or albinos, are to be expected in all species with red, pink, or blue flowers

and yellow blossoms may occur in red-flowered forms or the reverse, but in the case of plants in which it might be said to be normal to vary in color the problem is quite different. Probably the most familiar instance of what we mean is offered by the hepatica (*Hepatic triloba* and *H. acutiloba*). In any considerable colony of these plants in any blooming season one can count on finding flowers ranging from the deepest blue through white to an equally deep pink. Apparently each phase of color is permanent. The eastern painted-cup might be said to be red, normally; at least its specific name, *coccinea,* hints as much, but it is not uncommon to find wet meadows which are bright yellow with masses of these plants. In other spots, near by, one may find the plants of all shades of red, orange and yellow. It is difficult to see how differences in soil can account for these variations. Possibly some slight difference in the plant itself causes the reaction to its habitat. Most interesting of all are the color changes that are found in single plants. The garden hydrangea (*Hydrangea hortensis*) is a good illustration of the latter. Ordinarily it is a dull pink, but in some soils, the flowers become a decided blue. In general it is regarded as natural for blue flowers to be pink in the bud, the change to blue being supposed to be due to a difference in the acidity of the cell-sap but in the case of a pentstemon which has been known to change from bright blue flowers to pink ones when transplanted we have still another phase of the subject and one that is as yet unexplained.

ORIGIN OF OUR FOOD PLANTS.—All the food-plants of the world once grew wild somewhere; we simply cultivate their improved and better-flavored descendants. All parts of the earth, however, have not made an equal contribution to our dietary. The far northern regions naturally have little to offer, but the cooler parts of the temperate zones have sup-

plied few or none of our staple crops. Three regions, all of them in or near the tropics, have originated most of our food plants. First in importance is the Levant, the country around the eastern end of the Mediterranean sea where the earliest civilization of the white race began. Another region was the Indo-Malay of south-eastern Asia, and the third was our own Tropical American region in which originated potato, tomato, maize, lima-beans, peppers, chocolate, sweet potato and many others. A fourth region which has commonly been ignored, but which is rapidly coming into prominence for the number of unusual plant foods it produces, is comprised in certain elevated lands mostly in Peru. For some reason few of these have spread beyond the bounds of the country and so are comparatively unknown. The best-known product is quinoa, a species of pig-weed used as a breadstuff, but among others is a sorrel (*Oxalis tuberosa*) with edible potato-like roots, the *Cyphomandra* with a fruit so much like a giant gooseberry that it has been marketed under that name. There is also a nasturtium with edible roots, edible cannas, sunflowers, and many others.

Soils for Acid-loving Plants.—There are two ways of making ordinary soils fit for the growth of plants which delight in a sour soil. One is to add acid to the soil, usually in the form of tannic acid; the other is to remove the lime in the soil by applications of aluminum sulphate, or alum, which forms soluble combinations with the lime and is thus carried away in the soil water. According to Dr. Edgar T. Wherry who has studied the subject extensively about five pounds of aluminum sulphate per square yard applied annually is sufficient. The cost is not great and the application of the alum enables one to grow blueberries, rhododendrons, azaleas, arbutus, many orchids and an immense number of bog plants in soils that were originally so un-

suited to their cultivation that the plants would die almost as soon as planted. The Graham Chemical Company of Trenton, N. J. offer a small field outfit for testing the soil. When the reagent is added to an extract from neutral soils it turns purple, but when the soil is fit for rhododendrons, the dye turns yellow. One therefore has within his reach a very definite means of knowing whether the heathworts and the like will succeed in his grounds.

MORE HARMFUL SPECIES.—Leave it to the economic botanists and our part of the world would soon be a desert. The barberry is interdicted because it is reputed to carry the wheat rust, the wild rose is tabu because it harbors an aphis injurious to potatoes, the currant is to be pulled up because it is supposed to be concerned in spreading the white-pine blister rust and now it is suggested that several of our common ferns—among them the beech, marsh, sensitive, and lady ferns—be exterminated because they are reported to be the hosts of a species of rust that attacks the balsam firs. No attempt seems to have been made to exterminate the rust and other pests that injure our plants—all that the plant protectors can think of is to exterminate the other plants that might harbor them. In time they may suggest the extermination of the small boy because by building bird-houses he contributes to the spread of the English sparrow.

STOUT RAGGED GOLDENROD.—We have been familiar with nine species of goldenrod for a long time and supposed that was all that grew here; but a new one for this locality was found last September—a handsome clump of *Solidago squarrosa*. It has a rosette of basal leaves like *S. juncea* and some of these were three decimeters long. From their midst rose ten tall flowering stalks that reminded me of an overgrown *S. bicolor*—like the commonest form of *bicolor*, that does not branch at the top. The flower cluster was

shorter, thicker and more compact than that of *bicolor* and the racemes were stiffer and more erect. Midway in September, when in full bloom, the stout stems were red. The leaves too were wholly or partly a rich dull garnet. We were tempted at first to think it an aster, the heads were so large, the rays so long and the tips of the involucral bracts spread in such an asterlike manner, but none of our asters have yellow rays. It is the only eastern species with squarrose bracts, and it is pleasing to find its name suggests that feature. Perhaps this goldenrod is not so rare if one would search for it. A few days later I chanced on a second clump having three flowering stalks. It had sprung up too close to a *Baptisis tinctoria* and the latter, loaded with pods, had bent over pushing the later-flowering plant along with it.—*Nell McMurray, Clearfield, Pa.* [The seaside goldenrod, (*S. sempervirens*) is another species which suggests *S. squarrosa* because of the size of its flower-heads. In the West, *S. patula* has flowers fully as showy. These three are worth a place in any garden.—ED.]

THE SAND PHLOX.—One of the earliest and most interesting of our phloxes is almost entirely confined to the sandy parts of Illinois and Indiana. Occasionally it wanders into Michigan, Iowa and Tennessee but nowhere, except in the two States mentioned, is the botanizer likely to find it stretching for miles in unbroken sheets of bloom. The first flowers open about the time the trillium, redbud, and dogwood come into bloom and just ahead of its more familiar congener, the wild sweet William (*Phlox divaricata*). The sand phlox is *Phlox bifida* and, as its common name indicates, is partial to sandy regions and in many cases is the first plant to bloom in such places. The flowers are an inch or more in diameter and each petal is deeply divided, making the blossoms look as if composed of ten petals. The books mention the "pale purple corolla" from which we infer that the authors were speaking of herbarium specimens.

or perhaps trying to strike a fair average. As a matter of fact the color seems to vary with the locality and while in Illinois the flowers are usually white or purplish, in parts of Indiana they become deep violet. There seems to be no known reason for this difference though it will probably be found either in the composition of the soil or in the protoplasm of the plant. It is remarkable that those discriminating botanists who are wont to give every albino flower and fruit a technical name, backed up by a double author-citation, have not given a name to this equally pronounced color form. To save them this trouble it may be called the form or variety *violacea*. This method of naming it does not conform exactly to the rules, but this is probably all the better for the name-tinkers who now have an opportunity to attach a double author-citation to it or to give it an entirely new name.

THE PALE VIOLET.—Whoever named *Viola striata* the "pale violet" was either short of common names or was performing that thankless act known as "damning with faint praise." In reality it is a most attractive species with the height and bearing of the caulescent yellow violets (*Viola pubescens* and *V. scabriuscula*), but with a beauty that is all its own. Imagine a plant anywhere from six inches to a foot high with pure white or cream-colored flowers more than an inch across and you have the "pale violet." In the days of Bombastus Paracelsus, those seven mysterious purple lines on the lower petal would have signified something, surely. Though the plant forms conspicuous patches in low grounds it seems to be rarely found or noticed, for the books usually neglect to mention it. The species is said to make a very desirable garden plant for half-shaded spots. It is sometimes called the "cream violet," but it deserves even a better name than that.

WILDFLOWERS AS PERSONAL PROPERTY.—At the approach of another green apple season, James G. Scott injects a further complication into the farmer and small boy problem by sending up a clipping which indicates that in Pennsylvania, at least, it is neither a crime nor a misdemeanor to collect the fruit of the apple tree. The ruling upon which this decision is based says that while apples are on the tree they are attached to the land and are a part of the real estate; and one cannot steal real estate! If the apples have fallen from the tree, however, they become personal property and the taker may be arrested for theft though he appears to be guiltless if he removes the apples from the tree himself. Nobody knows how the laws would be construed in the matter of picking wildflowers. Unless specifically named in the laws aimed at their protection they might be regarded as real estate. If they become personal property when severed from the land they apparently become as much the property of the gatherer as of anybody else. We may yet need a Scopes in each State to discover just how far we may go in flower-gathering.

ABBERRANT YELLOW JESSAMINE.—*Gelsemium sempervirens*, yellow jessamine, as we call it, is likely the best known flower of Eastern Carolina. Every man, woman and child must certainly know it by name. Dogwood, azalea and mountain laurel may make a greater show in certain favorable locations, but, almost every location and every kind of soil seems to be favorable for yellow jessamine. It is at home in the tops of trees forty feet high, in the hedge rows, on fences, or trailing on the ground on bare sandhills—always with its five broad, rounded corolla lobes and five stamens with tube inflated and very fragrant. The abnormal plants are growing on tussocks in a swamp in Columbus County, North Carolina, with their roots a good part of the

time covered with water. Plants with flowers of the typical form are growing nearby, along the road embankment, but none out in the swamp, as these are. In the new form the flowers are about two-thirds the size of the typical form—by measurement, from three-quarters to seven-eighths of an inch long, as against about one and one-quarter inch for the type. The lobes of the corolla are narrow and pointed, on some plants tapering from the base to a sharp point. On each of eight plants examined, while flowers with five lobes predominated, some were found with six and some with seven lobes and in every case the number of stamens was the same as the lobes. On one plant at least one-fourth of the flowers had six lobes and a few had seven. The flowers are without fragrance, and for the four years that they have been under observation they have bloomed at least two weeks later than the type.—*H. A. Rankin, Hallsboro, N. Car.*

EDITORIAL

Just twenty-four years ago, the first number of a little 16-page magazine devoted to popular botany appeared among American publications and that magazine, grown somewhat larger with the years, is the *American Botanist*. The issue of three more numbers will round out a quarter-century of uninterrupted publication under a single editor without subsidies or other assistance from any club, society, or association—a record that no strictly botanical publication in America can equal. The magazine is older than *Country Life*, the *Garden Magazine*, *Torreya*, the *Fern Journal*, *Ecology*, *Journal of Botany*, *Guide to Nature* and many others; in fact the only publications of its kind that it regards as its seniors are *Botanical Gazette* and *Torrey Bulletin*. Some time ago, a prominent botanist expressed his appreciation of the fact that the magazine has never been allowed to grow up into the usual dry technical journal. It is true that the early numbers of nearly all scientific magazines are more attractive to the general reader than later ones. The increasing sapience of the editors make it difficult for them to sympathize with those who are still interested in less technical matters. Fortunately for us, a sufficient number of this latter class of readers has been found to assure the success of the magazine and it is likely that it may go on for another quarter of a century as a sort of Peter Pan among journals devoted to botany.

* * *

Those Tennessee legislators who sought to put an extinguisher on the study of evolution by the passage of a silly law must be somewhat astonished by the trend of

events. Until recently, evolution was largely an explanation of the origin of living things mentioned in musty textbooks where only the scientifically inclined were likely to discover it, but by the kind aid of a few literal-minded bigots, it has become one of the most-discussed subjects in the world. And since to understand evolution is to believe in it, converts to the cause now run into the millions. To the open-minded investigator evolution is not a theory but a fact. No real scientist doubts evolution though he may still be puzzled by some of its phenomena. When the present flurry is over, it is likely that we shall hear nothing further from the anti-evolutionist. There won't be any!

BOOKS AND WRITERS

The Wildflower Preservation Society has recently incorporated and has taken for its official organ the *Wildflower*, published in Cincinnati. * * * Everybody who favors protecting the wildflowers is invited to join. * * * The national headquarters are at 3740 Oliver Street, Washington. * * * The Illinois Chapter of the Society is endeavoring to make it possible for dealers to grow the wildflowers they sell instead of collecting them from the wild. * * * Sort of an effort to tame the wild flowers. * * * A fellowship for the study of seed germination problems is to be established at the University of Chicago. * * * Some of the work will probably be carried on at the Joliet Arboretum. * * * We shall publish the results as fast as they are available. * * * *Park's Floral Magazine*, the oldest botanical publication in America, with a claimed circulation of several hundred thousand copies

failed to appear during the first quarter of 1925. * * * The April number appears under new management after various legal complications were untangled. * * * H. L. Stewart is now owner and manager, but the magazine is the same old publication, including paper and presswork. * * * The Macmillan Company has substituted a new three-volume "Cyclopedia of Horticulture" by L. H. Bailey for the old six-volume edition. * * * The new edition contains more than 4000 illustrations and costs $20—just half the price of the original. * * * The same company has issued a new edition of Bailey's "Cultivated Evergreens" and reduced the price to $5. * * * Evidently the title of Herbert Durand's "Taming the Wildings" was either too tame or too wild for the Putnams for they have changed it to "Wildflowers and Ferns in their Homes and in our Gardens." * * * In spite of the clumsy new title, it is a most interesting little volume for the wildflower cultivator. * * * It ought to be made the official guide for the Wildflower, etc. Society. * * * C. G. Lloyd seems to have mastered the art of giving parks to the public. * * * When he establishes a park he adds sufficient funds to maintain it. * * * A new park of this nature is the "Lloyd-Cornell Wildflower and Nature Preserve" near Ithaca, N. Y. * * * The title, however, seems to put the wildflowers outside the realms of nature. * * * Wait till the Wildflower folks hear of this! * * * Sounds like "birds and animals," "roses and American Beauties" or "men, women, and school-teachers." * * * Lloyd has previously established a park of similar nature near his native city of Cincinnati and is highly esteemed as a citizen. * * * N. F. Petersen has issued the first number of *Opuntia*, a monthly journal, from Lincoln, Nebr. * * * It is described as "a Journal devoted mostly to botany and other things." * * * The other things in-

clude politics, postal rates, evolution, school fads, transmigration of souls and the like. * * * It is likely that some of the people mentioned in its pages will agree that it is a prickly specimen and worthily named. * * * Petersen is the author of the "Flora of Nebraska" listed in our April issue and says the office of publication is at Lincoln, Nebraska, instead of at East Lansing, Mich. * * * Somebody has been advertising a "Key to the Snakes." * * * Now we know why one of the desert snakes is called the "side-winder." * * * But it never occurred to us that it was necessary to wind up a rattlesnake to hear it rattle. * * * The Macmillans have issued an "Author's Book" which tells what the beginning writer should know in dealing with publishers. * * * It costs half a dollar and is worth having. * * * Dr. William Trelease has recently put forth second editions of his well-known "Plant Materials of Decorative Gardening" and "Winter Botany." * * * Both books have been revised and enlarged and aim to enable the student to identify more than a thousand kinds of trees and shrubs. * * * Few people know more about the woody perennials than does Dr. Trelease and his books are worth having. * * * He has recently issued a large quarto volume on the American oaks about which we shall have more to say later. * * * The United States Department of Agriculture has issued three recent Bulletins which may be of interest. * * * One has to do with the production of grape hyacinths in the United States, another discusses cultivated grasses of minor importance and the last is an entertaining account of the aspen in the Rocky Mountain region.

* * *

In a "Guide to the Trees," Dr. C. C. Curtis of Columbia University has produced a helpful little Manual for the general reader which is unique in its avoidance of the

technical terms so common in such works. The novice should have no trouble in naming his specimens by its use. All the trees east of the Mississippi and north of the Ohio are included, among them several not commonly assumed to grow in the region, such as the sourwood, woolly bumelia, silver-bell, Texas adelia, and sweetleaf. Each species is illustrated by a small but good drawing of the leaves, fruits and other characteristic parts, and these are further emphasized by a number of good "keys." A considerable number of the larger shrubs are also included, among them the hazels, alders, viburnums, sumachs, bayberries and chokeberries. The book is evidently intended to be carried into the field. It is of a size to fit the pocket though it contains more than 200 pages. It is published by Greenberg of New York, and costs $1.50.

From Dorothy M-P. Cloud, a graduate of a well-known school of horticulture at Ambler, Pa., comes an interesting volume on the "Culture of Perennials." In Part I. the author discusses such subjects as soils, fertilizers, hot-beds, cold-frames, insect pests, plant diseases, and plant propagation. The bulk of the book, however, consists of Part II. in which upward of two hundred pages are devoted to the well-known garden favorites, each under its technical and common names. Information is given as to methods of cultivation, winter treatment, methods used in multiplying and a running description of the plants themselves. The leading varieties of each are named and their height, color, time of blooming, etc. added. In some places the treatment approaches rather too closely to that of the nursery catalog to please the Reviewer, but the book will certainly be intelligible to the beginner, for whom it is designed, and add its share to popularize flower-gardening. A number of excellent full-page plates of garden scenes are included. The book is published by Dodd, Mead & Co. of New York and costs $2.50.

A little book on "Flowering Trees and Shrubs," by A. J. McSelf appeals to us because the author calls attention in it to so many varieties of the rarer sorts. The book is designed for British readers, but gardeners on this side of the water can learn much from it. Incidentally it may be said that the author finds many common American shrubs of interest and has a good word for the viburnums, the sumachs, currants, kalmias, rhododendrons and many others. More than a dozen magnolias are mentioned. The text is divided into fourteen chapters with such headings as Peat Loving Shrubs, Climbing Shrubs, Flowering Shrubs for Hedges, and Flowering Shrubs for the Rock Garden. There are the usual data on pruning and propagation, and a large amount of information regarding the individual species. Four plates in color and many other illustrations add to the value of the book. In some respects the printer has not been kind to the text. On page 100 the title line of the Laburnums has been dropped out and on page 145 the St. John's wort is called "rose-of-Sharon." It is, however, an excellent book for all who aspire to grow more than the common run of plants in their gardens. It has 225 pages and is published in America by Charles Scribner's Sons of New York. The price is $2.

In concluding his preface to "The Gardener" a new book designed to replace the "Practical Garden Book," L. H. Bailey, the author, says: "I hope this plain little book will seem good to those who like simple things which they grow themselves," and the Reviewer opines that his hope is likely to be realized. The book is full to overflowing with hints and helps for the gardener and in most cases does not stop at the "simple things" only. Beginning at A and running through the alphabet all the plants of any importance are listed with descriptions of the flowers,

length of the life cycle, the native country, and plant family of each, with directions as to where to plant, how to cultivate, propagate and care for them all. There is also much information on such subjects as bulbs, budding, grafting, hedges, lawns, and weeds. The arrangement in dictionary form is a happy thought since it makes it easy to look up the desired information. There are more than 250 pages of text and a considerable number of illustrations. It is published, of course, by the Macmillan Company, New York, and costs $2.

Consider what we owe to the meadow grass, to the covering of the dark ground by that glorious enamel, by the companies of these soft, countless and peaceful spears of the field! Follow but for a little time the thought of all that we ought to recognize in those words. All spring and summer is in them—the walks by silent, scented paths, the rest in noonday heat, the joy of the herds and flocks, the power of all shepherd life and meditation; the life of sunlight upon the world, falling in emerald streaks and soft blue shadows, where else it would have struck on the dark mold or scorching dust; pastures beside the pacing brooks, soft banks and knolls of lowly hills, thymy slopes of down overlooked by the blue line of lifted sea; crisp lawns all dim with early dew or smooth in evening warmth of barred sunshine, dinted by happy feet softening in their fall the sound of loving voices.—JOHN RUSKIN.

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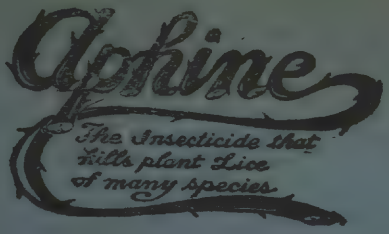

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THE EVENING STAR—*Mentzelia ornata*

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The daylight fails; across the river's reach,
Faintly the village bells sound on the breeze;
The rippling waves come singing to the beach
And stir the reeds to soft antiphonies.
C. F. SAUNDERS.

COUSINS OF THE CACTUS

By WILLARD N. CLUTE.

THE cacti are so different from other plants that they seem to have no near relations. By themselves they form the plant family known as the Cactaceae and this single family constitutes the order Opuntiales. On one side of this order, in the usually linear sequence, are the Myrtales with a dozen or more families, and on the other are the Violales with nearly as many more. Though violets are not at all like cacti, there is one family in the group, the Loasaceae, which contains species that in many ways suggest the cacti, if they cannot claim close relationship.

The members of the Loasaceae have hard prickly leaves, flowers much like the cacti and they flourish in the dry soil of our arid West. Like the cacti, too, several have the habit of blooming at night.

One of the showiest of the Loasaceae is *Mentzelia decapetala* which is sometimes offered in seed-catalogs as *Mentzelia ornata*. This species inhabits the plains from Texas to Saskatchewan and westward, and often grows in considerable colonies. The flowers are white or cream-colored, frequently four inches across, and consist of ten lanceolate petals and numerous stamens.

At mid-day the plant is like much of the other desert vegetation, but as the shadows lengthen one flower after another bursts forth spreading its ten petals until the plant merits its name of "evening star." Whole galaxies of blossoms spread across the sandy slopes and others ornament the wayside. The plant is called "prairie lily" and "gumbo lily" but "blazing star" seems to be a book name or transferred from some species better entitled to bear it.

A peculiarity of our species is that the seed-capsule usually has tiny leaflike objects growing from it that make it easily identified. These can be clearly seen in the photograph from which our frontispiece was made but in the process of engraving, these have been nearly obscured.

COCONUTS

By J. O. STANCLIFF.

FOR picturesqueness and romance, coconut palms should be seen by moonlight, or on the shoulder of an otherwise prosaic-looking hill such as in our bleak northern climate would be covered with bayberry bushes; or as part of the scenery of a lovely valley like that of Atuona, with waterfalls, steep glens and cliffs although a coconut-grove in a valley, viewed from the top of a high hill, leaves nothing to be desired in attractiveness. At least, these are my own reactions with regard to coconut-palms.

In my valley of Tahauku in the Marquesas there was a great sufficiency of coconuts. At times the Cantonese would strip certain portions of the valley of their product, then I would have to travel perhaps a quarter-mile or more, to obtain my grating nuts.

These young Chinamen used their bare, leathery feet and a few shallow notches in the trunks, to climb to dizzying heights, whence they threw to the ground the full-

grown nuts, which they made into copra,—halving them and scooping out the meats, which they left to dry in the sun on wooden trays for a couple of days, more or less, depending upon the weather. In Raiatea, Society Islands, I observed coconut meats strung on sinnet derived from *Hibiscus tiliaceus* (*purao*) bark, between posts made from the same tree, which would seem to be a most primitive and interesting method of copra-making.

I noticed that two or three of the loftiest palms, close to my shack in Tahauku, were not climbed, but these were nearly perpendicular. Ordinarily they slope in any direction, like plumed and tipsy Indians doing a war-dance.

It is quite a trick to husk a coconut. For a long time I used my heavy knife, but finally this was stolen and I had to borrow a native's knife to trim a guava sapling into shape for a husking-stick. Guava wood must be used; *purao* is too light. This stick is planted in the ground, pointed end upward, and the nut husked by sticking the point in at the stem end, starting a small segment, and then proceeding with a twisting motion to remove the rest of the husk, a segment,—sometimes a whole half,—at a time. Some husks stick worse than others.

Stevenson at Vailima found the milk of green coconuts a most healthful drink. A diet of this milk, together with the tender meat of young nuts, and "coconut steak," green breadfruit and a few bananas, served to keep me in health for the week I dwelt in Hanaheku, with a sprained ankle, my sole companions the trade wind, a wild and rather unsociable hen with chickens who had followed me down from the top of the island, and a number of very lively fleas who resented my occupancy of the otherwise very neat little house of woven coconut leaf and bamboo which I found vacant waiting for me at the top of the beach,—that is, unless I include a few members of a large flock of

goats up on the plateau, who made their appearance on the cliffs. A boatload of natives went by, to seaward, but they were only in sight for a few minutes.

While on Hiva-oa island I made my shrimp nets of cheesecloth, but there is a fibrous net-like fringe of generous proportions attached to the bases of many young coconut palms, which is a very good substitute therefor. Among other things, coconuts furnish bowls and shrimp bait (the shrimp will risk their little lives almost any day for coconut meat) ; and the leaves make good brooms, fuel and bedding. The wood is useful also for a variety of purposes.

For coconut-graters the natives in the early days used pearl oyster shells filed into points, but now they file an old hinge or other suitable piece of iron into a rounded, spur-like, toothed implement, which, being securely fastened upon a piece of wood, or a box, is straddled by the operator, who shreds the nut, one-half at a time. The snowy heaps of gratings are then ready for the wetting, of water or coconut milk, the latter a very different liquid from that which exudes from your cloth, as you squeeze the gratings in a cloth, holding the whole over a wide-mouthed deep dish. This creamy milk is very oily and rich, and a little goes a long way.

THE SICKLE-POD

By NELL MCMURRAY.

IT is rather unusual for a plant to attract more attention after it is dead, but I learned to know our sickle-pod (*Arabis Canadensis*) in the winter when it is conspicuous in our woods. It was a thing of beauty with its numerous flat pods, each about two inches long and slightly curved. Most of the outer coat of the pods fall away in autumn, but the delicate placenta, with here and there a seed holding on, tarried all winter. Toward the end of winter these partitions whitened and in March disappeared in fragments, leaving behind only the hair-like framework.

It was a little puzzling, early in June, to locate the sickle-pod plants in the tangle of green where they grew. Being familiar with its winter aspect, one needs to look and ponder. The old fruiting stalks were easy to locate, but pulling them up did not help for they were dead, through and through. This suggests that the plant is not a perennial. Here and there were simple straight stems two or three feet tall with scattered leaves the lowermost of which were lyrate while those above were lanceolate and dentate. The leaves gradually became smaller and were but an inch long and entire, at the tip. At the very top, a bunch of flowerbuds nestled.

One week later, I paused again at a sickle-pod and found that it was beginning to branch. From the axils of the upper leaves, shoots containing leaves and flowers were appearing. The main stalk above the topmost leaf had lengthened two and one-half inches and on it were forty flower buds. The pedicels are erect when the buds are small, they spread when the buds begin to grow, and after

flowering they droop. The four white petals are narrow, insignificant, and merely the tips of them spread when the flower blooms. The two short stamens and the four long ones are there of course with white filaments and green anthers. It seems curious that the little green pistil concealed by the long filaments will be one of those pretty curved pods in a few months.

THE MEANING OF PLANT NAMES—XXIV

GENTIANACEAE

By WILLARD N. CLUTE.

THE Gentianworts have two separate claims on our attention: the flowers for the most part are large, showy, and much sought after, and the plants that bear them are very frequently medicinal and valued accordingly. In this group is the fringed gentian, which owing to its deep blue flowers with fringed petals and its habit of blooming when most of the flowers have faded, has inspired the poet and given it a renown perhaps quite out of proportion to its merits.

The Gentianaceae trace their family name to the genus *Gentiana* whose species have medicinal virtues that according to Pliny were discovered by King Gentius of Illyria. Gentius, however, is not alone in having genera in this family named for him; in fact nearly all our American genera in this family bear the names of individuals. *Sabbatia* is for one L. Sabbati an early Italian botanist, *Halenia* commemorates the German scientist Johann Halen, *Bartonia* was named by Muhlenberg early in the last century for Benjamin F. Barton of Philadelphia, and *Frasera* is for John Fraser, an early collector.

Among the other names, *Centaurium* is said to be from *centum*, a hundred, and *aurum*, gold, referring to the medicinal virtues of the plant which are thus reputed to be literally priceless. Our commonest species is a European plant whose name in the German is tausenguldenkraut which suggests the same thing. Either is more poetic than *Erythraea* from the Greek for red, which is occasionally used for the genus.

The best-known plant in the genus *Obolaria* has thick rounded scale-like leaves and derives its name from *obolus*, a small Greek coin which they are thought to resemble. A pretty little water plant commonly known as "floating heart" is typical of the genus *Nymphoides* which means simply, "like the water-lily" (*Nymphaea*). Another name sometimes used is *Limnanthium* which signifies "pool-flower" and is fully as appropriate.

A single medicinal plant of cold bogs in the northern parts of both Hemispheres has a genus all to itself. This is *Menyanthes trifoliata*. The generic name is said to be derived from the Greek for month and flower, and Gray hazards the suggestion that the name refers to the fact that the plant blooms for about a month, but it is evident that the plant's medicinal virtues have induced the name. *Pleurogyne* is also from the Greek, the two words composing the name meaning side and female. This refers to the stigmatic surfaces which are lateral instead of terminal as is usual in flowers.

In spite of the prominence given the gentianworts by reason of their medicinal properties, common names are not abundant. *Obolaria Virginica*, for instance, has only the title of "pennywort" which needs no explanation, and *Halenia* is "spurred gentian" in contrast to the other gentians which are not spurred. *Nymphoides lacunosum* and *N. peltatum* are both known as "floating hearts" from the shape of the leaves, and the latter may be known as

"water-lily," also. *Pleurogyne rotata,* a rare little plant of the northlands, is "marsh felwort." The latter half of the name is said to be a corruption of "fieldwort" but since a marsh is scarcely a field in the popular sense, there seems to be a slight contradiction of terms. *Bartonia Virginica* from its zig-zag stems is "screw-stem" and from its color "yellow bartonia."

Recalling the reputed medicinal virtues of that immigrant from Europe that is occasional in our fields—*Centaurium umbellatum*—it is easy to understand most of its vernacular names. Commonly called "centaury" or "lesser centaury," derived from the generic name, it is also "bitter herb," "earth-gall," "bloodwort" and "fever-few." "Sanctuary" is, of course, an ignorant rendition of "centaury." "Mountain flax" may have been given from the appearance of the plant, though it is scarcely flax-like; but we are at a loss for the significance of "Christ's ladder."

The "American centaury," regardless of genera, is *Sabbatia angularis.* Doubtless similar medicinal virtues, or reputed virtues, accounts for the name. It is also "bitter-bloom" and "bitter clover" though unclover like. The handsome pink blossoms make it "rose-pink," and "pink bloom." Like its congeners it may be called "sea pink" and "marsh pink" while "square-stem" needs no explanation. *Sabbatia campanulata* is "the sea pink," "marsh pink" and "rose-of-Plymouth" while the western *S. campestris* is the "prairie sabbatia."

Of the gentians, the most noted is, of course, the "fringed gentian" or "blue fringed gentian" (*Gentiana crinita*). It has no other common names and has to share even those it has with another species, *G. procera,* whose petals are also fringed but less conspicuously so. Next to the fringed gentian in popular importance is the "closed gentian" (*G. andrewsii*) whose great purplish blue buds seem never to

open. The bee, however, knows the secret of its closed corollas and visits them regularly. Other names alluding to the closed corolla are "blind gentian," "bottle gentian," "barrel gentian," "dumb gentian," "dumb foxglove" and "cloistered hearts." It is another "blue gentian" in a genus where most of the species are blue and "Sampson's snake-root." The identity of this particular Sampson, who runs through the list of medicinal plants and appropriates several to himself, does not seem to be known at present.

There are other closed gentians, notably *Gentiana affinis* and *G. saponaria* though the corollas of these are never so tightly shut in daylight as are those of *G. Andrewsii*; in fact they may be fairly well open in full sun. The second is another "Sampson's snake-root" but it is best known as "soapwort gentian," a fact further emphasized by its specific name. A large number of plants contain a natural soap or saponin in their tissues but no use seems to have been made of the saponin in the present species. The plant is appropriately known as "marsh gentian," but "rough gentian" is of no significance and "harvest bells" merely a poetic attempt at naming, harvesters seldom having time to consider even the lily.

Still another "marsh gentian" and "Sampson's snake-root" is *G. villosa.* Its striate corolla makes it "striped gentian" though *G. affinis* might produce good reason for sharing the name. Our species is the "straw-colored gentian" while *G. flavidus* is the "yellowish gentian" or "yellow gentian." The circumpolar *G. amarella* is the "northern gentian" and "fellwort." This latter name, often translated "fieldwort," probably has a more ancient meaning. Fell used to be good English for a wild upland or moor and in the 16th century it indicated a marsh. So whether the plant inhabits field, moor, or marsh, it seems to have been appropriately named. Though a true member

of the gentian genus it is sometimes called "false gentian" —probably to distinguish it from some more frequently used species known as the true gentian. The plant is another of those called "baldmomy" though as to what the name means, everybody is in doubt. It is, however, a very ancient name for the gentians.

Gentiana quinquefolia is another bitter species as the names "gall-weed," "gall-flower," and "gall-of-the-earth" indicate. Naturally the plant is "ague-weed"—all plants if bitter enough seem once to have been considered specific for "chills and fever." The short erect stems have given the plant the name of "stiff gentian," but it must have been a misreading of the specific name that caused the plant to be called "five-flowered gentian," for *quinquefolia* means "five-leaved."

The medicinal properties of *Frasera Caroliniensis* are sufficient to cause it to be known as "American Columbo." The name, however, suggests the existence of another "columbo" and we find this to be a fact. The original "columbo," or "calumba," as it is usually spelled, is a member of the Menispermaceae or Moonseed family and inhabits the tropics. The relation of our species to the gentians is shown by the name "yellow gentian." The plant often grows to a height of six feet or more from a broad base made by the spreading leaves. Whether this is the excuse for calling it "pyramid-plant," "pyramid-flower" and "monument plant" is difficult to say. Probably the long smooth leaves have given it the name of "Indian lettuce" and "deer's ears." "Meadow pride" doubtless refers to the ornamental qualities of the plant and "ground centaury" suggests a resemblance of some of its qualities to the true centaury, but why the adjective in the name nobody seems to know.

Last of the American gentianworts is that curious inhabitant of cold bogs or moors known to the botanist as *Men-*

yanthes trifoliata and to the herb-gatherer as "buck-bean." It is said that the original of the name was "bog-bean" but "buck-bean" it has been from ancient days. Several of its common names refer to its watery habitat, often with identifications that are wide of the mark as "bog-hop," "bog-myrtle," "bog nut," "moor flower," "marsh trefoil," "marsh clover," "water shamrock," "water trefoil," and "brook-bean." The leaves are divided into three leaflets which accounts for the frequency of "clover," "trefoil," "bean" and the like in the common names. "Bog-hop," however, probably alludes to its bitter taste as does "bitterwort." We find "bitter-worm" in a book of plant names but this is probably a misprint for "bitter-wort." "Bean trefoil" seems to have been made by somebody who could not decide between beans and clovers and so included both.

FRUIT AND VEGETABLE

BOTANICALLY speaking, a fruit is the ripened ovary of the flower, with or without certain additional parts such as the receptacle or the calyx. All fruits are of course, vegetables but all vegetables are not fruits. There is, to be sure, a popular definition of a fruit which requires it to be juicy and well flavored, but any seed-pod is as much a fruit as the apple or tomato. A New York judge, some time ago, attempted to lay down a distinction between a fruit and a vegetable by the statement that anything that could be eaten out of hand is a fruit, while all that must be cooked are vegetables. But this is not a good definition. One cannot change a fruit into a vegetable by cooking it! It would be well if speakers and writers would learn to distinguish between pot-herbs, salad-plants, condiments and the like, instead of referring to all of them as vegetables or "greens."

The well-known "Lexicographer" of the *Literary Digest* has the following to say on the subject in a recent issue. We must point out, however, that while the asparagus is a true stem, the edible part of the celery and rhubarb are petioles instead of stems. The potato is truly a modified stem, but the onion is not, being in fact the thickened bases of the leaves.

Fruit (*L. fructus*, from *fruor*, enjoy, the sense still retained in the kindred word *fruition*) originally denoted any profitable or enjoyable result or product, as, "The *fruits* of righteousness." *Phil.*, i, 11; and especially any useful or enjoyable product of a living organism, vegetable, or animal; as, "Blessed shall be the *fruit* of thy body, and the *fruit* of thy ground, and the *fruit* of thy cattle." *Deut.* xxviii, 4. Gradually the word became restricted to edible products of plants, including all *grains*. In botany, a *fruit* of a flowering plant is the matured seed-vessel and its contents, together with such accessory parts as become finally incorporated with them. Thus, in the botanical sense, not only apples, pears, peaches, tomatoes, figs, etc., but all berries, nuts, grains, beans, peas, pumpkins, squashes, cucumbers, and melons, as well as pine-cones, the samaras or winged seeds of the maple, ash, or elm, and many other products, are *fruits*. Popular usage has, however, become much narrower. Grains have been dropped, and the tendency is to drop nuts also, so that a *fruit* is now generally understood to be the fleshy and juicy product of some plant, usually tree or shrub (and nearly always containing the seed), which, when ripe, is edible without cooking, and adapted for use as a dessert rather than as a salad. The quince, however, tho usually cooked before eating, is classed among *fruits*, and sometimes we speak of poisonous *fruits*.

A *vegetable*, in the popular sense, is any part of a herbaceous plant commonly used for culinary purposes, and may

consist of the *root*, as the beet and turnip; the *stem*, as in the asparagus, celery, and rhubarb (or pie-plant); a *tuber*, or underground stem, as in the potato; the *foliage*, as in the cabbage and spinach; or of that which is botanically a *fruit*, as in the tomato, bean, pea, and eggplant. Thus the tomato is both a *fruit* and a *vegetable*, tho for table use and in the garden and market it ranks as a *vegetable* only. In like manner the pumpkin and squash, which are botanically *fruits*, are classed as *vegetables;* while the melon, which is of the same family, is termed a *fruit*. "The *fruits* of certain low-growing perennial plants are specifically termed by horticulturists 'small *fruits*,' including the strawberry, raspberry, blackberry, gooseberry, currant, huckleberry, and cranberry. The term includes grapes but excludes cherries." Crozier *Dict. of Bot. Terms*, 1892. Edible products that grow underground are commonly classed as *vegetables*, whether edible roots, as the beet, turnip, and carrot, or potatoes, and onions, which are not true roots, but modified stems. Peanuts (ground-nuts or goobers) are true *fruits*, tho ripening underground. The *fruit* of the potato is the so-called potato-ball, which is botanically a *berry*. The terms *roots* and *root-crop* are used specifically, in the agricultural sense, of beets, turnips, carrots, mangel-wurzels, etc., especially as designed for feeding cattle.

THE OPENING OF FLOWERS

By DONALD C. PEATTIE.

The American Botanist was so successful in bringing together information upon the fragrance of flowers, a subject much neglected in ordinary manuals and botanies, that I am wondering if you would be willing to start the ball rolling in your pages to gather by accretion from your readers and contributors, notes on the subject of the opening and closing of flowers. There is not nearly enough

information of a precise sort on this matter in our standard books, and it is a subject full of fascination.

Those who see botany from the point of view of plant physiology ought to come forward with some explanations of why and how flowers open and close, whilst those of us who prefer the observational method ought to bring together all the data on the kinds of plants which exhibit regular movements in their petals during the twenty-four hours. Everyone of your readers lives in a place where one or more such plants grow. Many manuals do not even mention these movements, so that it is difficult to tell what plants to watch. Drawing on my memory I should suggest that the following genera and families be watched: Nymphaeaceae, Silene, Lychnis, Epidendrum, Cactaceae, Cistaceae, Nicotiana, Linum, Chicorium, Tragopogon, Pyrrhopappus, and Eschscholtzia. I do not doubt there are many others. One of the first things to do will be to get together, through the collaboration of your readers, a complete list of the species for the United States (cultivated as well as wild plants should be included).

Then, on the observational side, the following points it would seem to me, should be kept in mind:

Time the opening and closing of your flower, noting when it begins to open or close, and how long it takes to complete this movement. Does the movement appear to go faster during one part of the whole than at another? Extend the observations over several consecutive days to find how much variation it shows in starting.

Do not fail to note the day of the month, as the sunlight varies with the season. Record observations in standard time, not "daylight-saving." State the locality, as latitude makes much difference.

Is the opening and closing of diurnal flowers affected by passing clouds, if so how long a duration of cloudiness is required for the reaction time of the plant? (Caution

here: nocturnal flowers growing in shade sometimes stay open most of the day, appearing like diurnal flowers.)

Try to make a diurnal flower open in the night with any form of artificial light. Note the reaction time if any.

[To the list given by Mr. Peattie should be added *Oenothera, Datura, Cleome, Erythronium, Tradescantia* and *Portulaca,* at least. Those interested in the subject should endeavor to distinguish between the effects of heat, light and humidity. The crocus and dogtooth violet appear to open only in full sunlight and the tulip also requires full sunlight to be at its best. Morning glories, evening primroses and four-o'clocks have different times for opening during the season and late in the year may remain open all day. Evening primroses, which ordinarily last but a single night, may be kept open for at least three days and nights, if kept in a cool dark place, but we have been unable to fool a datura blossom in this way. Whether the effect is due to the absence of light or to the moisture or temperature does not seem to be known at present. Water lilies gathered at the first streak of dawn and kept in the dark will remain closed all day and open in the evening if exposed to artificial light. Lord Avebury kept a dandelion "awake" all night by placing a bright light near it. On the other hand, it is said that some plants that open at dawn, do so, whether kept in the dark or not. Here is an almost virgin field for experiment and one that needs to be worked. Who can tell exactly, what it is that causes these flowers to open? Plants that open at dawn and close at dusk are probably influenced by the light, but what influences these others? —Ed.]

NOTE *and* COMMENT

PRUNELLA VULGARIS NANA.—That curious form of the self-heal (*Prunella vulgaris*), known as the variety *nana* continues to spread. It has now migrated as far westward as Joliet where it is busily running the grass out of various lawns. The species itself is an erect plant fond of roadsides and ditches, but the variety clings close to the soil and roots at every joint. The flower-heads are quite small and borne so close to the ground that they easily escape the lawn-mower. Nobody seems to know whether this is a form induced by the mower or whether it is a mutation that finds the closely cropped lawns to its liking. In any event, it is a striking plant and as distinct as many another plant considered a good species. The makers of our Manuals seem never to have heard of it and those who collect it are likely to be misled and think they have a new form.

CALIFORNIA EVENING PRIMROSE.—The common evening primrose (*Oenothera biennis*) is supposed to have a range practically as wide as the continent, but seeds of this supposed species sent from Calpella, California, produced plants that are quite different. In the first place the western plants are annuals and their flowers are much larger than in the common form. The four petals, of a fine shade of primrose yellow, spread out in flat saucer-shape and are quite decorative. They open early in the evening and are late in closing next day. Though not adapted to cutting, the plants are quite desirable for the flower garden and may well be given a place in extensive plantings. It is one of the best of the night-flowering

species. The plant of the West is often mentioned as *Oenothera Hookeri* and it is likely that those who have seen it in bloom will agree that the plant is properly regarded as a distinct species.

A WHITE BLUEBERRY.—Mr. Clesson M. Litch has forwarded specimens of a white-fruited form of the high-bush blueberry (*Vaccinium corymbosum*) which he found near Fitchburg, Massachusetts. The bush is about six feet high and is growing among young aspens and birches along an old woodland path. The soil here is moist but not at all swampy. The berries are of medium size, quite sweet, and pure white, except at the calyx end where they occasionally show a tinge of red. As we have often noted, one may expect white or albino varieties in all pink, blue, and many red flowers, and in many red, blue, and black fruits, but the occurrence of such forms is always worth recording. It seems likely that white-fruited forms of the high-bush blueberry have been found before but none of the books consulted mention the fact and with a view of giving this form a handle we suggest that it be called *Vaccinium corymbosum* forma *albicarpum*. With the exception noted in the fruits, it appears exactly like the type. It is hoped that Mr. Litch will keep an eye on the plant in subsequent years and discover, if possible, other points of difference.

SEED-DISPERSAL IN VIOLETS.—The witch hazel is the classic example of a plant that distributes its seeds by propulsion but there are a number of other plants that can shoot their seeds much farther though they are seldom mentioned and less widely known. The seed-pods of Jersey tea (*Ceanothus Americanus*) explode and scatter their seeds in all directions, some being thrown a thousand times their length. The violet pods do not explode and in every way are more deliberate than those of *Ceanothus* but up to the

present they hold the record for the distance covered. They often shoot their seeds fifteen hundred or two thousand times their length. When the violet pod is ripe, it divides into three sections representing the three carpels of which it is composed. The divisions then spread widely apart and disclose in each about a dozen shining seeds arranged in a double row. Then as the divisions lose moisture they begin to contract and soon the pressure is too much for a seed which slips between the jaws of the contracting division and disappears with an audible snap and a kick that jars the entire seed pod. It has been stated that the end seed is the first to go and that the rest follow in regular order, but this is incorrect. It is more likely that the seeds near the middle of the division will leave first, as here the pressure is greatest. This method of seed-sowing is most annoying to the gardener who wishes to keep his different clumps of violets separate. In a short time they are pretty well mixed. It should be added that the seeds and seed-pods spoken of are produced by the cleistogamous flowers that lie close to the rootstock half buried in the earth. The showy early flowers rarely bear seeds and seem made to be picked, but it would be hard to convince the wildflower protection societies of the fact.

COLOR-CHANGES IN PENTSTEMON.—Several times we have mentioned a pentstemon with deep blue flowers that turn pink in cultivation. In the wild it appears always to be blue, but the identical plants in ordinary garden soil become pink at the next time of flowering. There are a large number of cases known in which blue flowers turn pink in acid soils, but the soil in which these flowers are growing is alkaline and not acid. Although it seems to be the regular thing for plant juices to turn blue in alkaline solutions—the litmus paper so commonly used being a good example—there are other plants that reverse this

proceeding and turn blue in acid soils. The garden hydrangea (*H. hortensis*) is a good example. Suspecting that something of this nature might be the directing force in the Pentstemon, the soil in which some of the plants grew was made acid by the use of aluminum sulphate and, sure enough, the flowers they produced were of the original blue. In this is once more illustrated how hazardous it is to give special prominence to any color variation. Somebody may come along with a pocketful of alum and change the species when one is not looking!

MULTIPLYING THE WILDFLOWERS.—Not all wildflowers need the aid of man in spreading over the globe; they attend to that for themselves. All weeds are by nature able to do this, otherwise they would not be weeds. Orchids, on the other hand are never weeds because of the difficulty they encounter in reproducing at all. If the insects to which they are adjusted do not appear they set no seeds. In consequence the race of orchids is steadily diminishing. Among wildflowers able to take care of themselves must be included all plants that readily multiply vegetatively like the crown vetch (*Coronilla varia*), live-for-ever (*Sedum*), lily-of-the-valley (*Convallaria*), obedient plant (*Physostegia Virginica*), moneywort (*Lysimachia nummularia*), white evening primrose (*Oenothera speciosa*), and ground nut (*Apios tuberosa*). Included with these may be those plants that multiply quickly from seeds such as the white daisy, the brown-eyed Susan, the ditch sunflower, and numerous violets. Before we can intelligently list the plants needing protection, it will be necessary to investigate their means of self-preservation. It is likely that pigweed amaranth, purslane, chickweed and a number of others may be ignored in this connection. Thus far they have shown a praiseworthy determination to succeed without any outside help.

ABNORMAL PLANTAINS.—The common plantain (*Plantago major*) is occasionally found with a rosette of leaves halfway up the flowering shoot at the base of the flowers themselves. In specimens recently found by the writer, there was a complete rosette of leaves about half the size of the ordinary leaves. An examination of the specimens shows that the rosette is formed of the first few lower bracts. Thus far the abnormality seems to have been reported for the European species only, and should be looked for in other species. Incidentally it may be observed that the "common dooryard plantain" includes not one, but two separate species. The commonest is *Plantago major* introduced from Europe. It may be distinguished by its grayish green color. The native species that grows with it is a clear bright green and may be further distinguished by the fact that the base of the petioles is nearly always purple in color. That this is not a mere color variation of the first is shown by the seed-capsules. Those of *P. major* separate above the middle, the upper part coming away like a lid after the manner of the purslane and the rose-moss of our gardens. The capsule of our native plantain (*P. rugelii*) separates below the middle.

IRIS DICHOTOMA.—An iris that blooms regularly in July and August is a curiosity, but there is such a species in existence in *Iris dichotoma*, collected some years ago by the late F. H. Meyer in China. Its native habitat is on stony hillsides, but it thrives in any good garden soil. In its vegetative features it is so much like another iris-like plant, the leopard flower (*Belamcanda Chinensis*), that it would be hard to distinguish them apart when growing. Its habits of blooming also have a resemblance to *Belamcanda* for the blossoms are carried high above the leaves and there are often twenty flowers on a stalk. The flowers are lilac-colored, open late in the morning, and last for a day. They

are about the size of those of the leopard flower, and planted in a clump should make an attractive addition to the garden. They bloom the second year from seed.

SPURGES AS CUT-FLOWERS.—The florist is ever on the hunt for new materials wherewith to improve the appearance of his creations. We do not now refer to those atrocious bundles of gilded weeds and seed-stalks dubbed "winter bouquets" nor yet to the wild "everlastings" of the genera *Gnaphalium* and *Anapholis*, the "fancy" and "dagger" ferns (*Nephrodium spinulosum* and *Polystichum acrostichoides*), the ground pines (*Lycopodium*), or the southern smilax (*Smilax Walteri*). The material we have in mind is still more recent and consists of the inflorescences of the so-called "flowering spurge" (*Euphorbia corollata*) which grows wild in abundance in most sandy areas in the Middle West. The involucres surrounding the inconspicuous flowers have showy white appendages which look like petals and give the inflorescence somewhat the appearance of the cultivated baby's breath (*Gypsophila paniculata*) so commonly used in bouquets as a foil for larger flowers. Since the *Euphorbia* grows in waste lands, may be had for the gathering, and adds considerable to the beauty of other flowers, it is being used in ever increasing quantities. Unlike many flowers containing a milky latex, the flowering spurge keeps for a long time in water.

MORTALITY OF SEEDS.—Each season every plant ripens as many seeds as it can and sows them far and wide, but a surprisingly small number come up. Many are incapable of germinating, to begin with, and many others fall in places unsuited to growth, but even when good seeds are carefully collected and planted under the best of conditions, they often fail to grow. Sometimes the seed-coats exclude moisture or air for a long time and thus prevent growth but occasionally it is the other way about and the seeds

must be sown at once to secure germination at all. If they are once allowed to dry they seldom sprout. The garden phloxes are in this category and nobody knows how many others. In seeds with a very hard seed-coat or testa, such as cherry, plum and the like it is customary to "stratify" them by placing them in moist sand over winter or planting them in autumn. According to a writer in *National Nurseryman* it makes a great deal of difference when such seeds are stratified. Those placed in moist soil as soon as ripe gave a much better percentage of seedlings than those saved for a while and then planted. Among other ways of getting slow seeds to germinate, is to plunge them into boiling water or crack the shell that encloses them. Certain seeds, also, have an after ripening process and though fallen from the tree will not grow at once no matter what conditions they are exposed to. Intelligent seed-sowing therefore, is more than simply putting the seeds in the soil. Often the place in which they were planted must be protected for a year or more if we would have young plants. This is the situation in the peony, which does not appear above the soil until the second year, though it does begin to grow, producing a long root the first season.

DERIVATION OF "BEDSTRAW."—Mr. Howard Whitney takes exception to the statement in a recent issue that the bedstraw is so called because it was mixed with the straw in the manger in which the infant Jesus lay. He cites Webster and the Century Dictionary to the effect that the plant receives its name because it was once used in beds. On occasion, however, we do not hesitate to disagree even with the dictionary. It is quite likely that in ancient times a large number of herbs were used for beds but it may be doubted whether any species of *Galium* is conspicuous enough to be singled out for this purpose when straw is cheaper, cleaner, handier and more durable. On

this point a note in Rev. Hilderic Friend's "Flowers and Flower-lore" is apposite. He writes "The name of 'ladies' bedstraw,' which was anciently 'Our Lady's bedstraw' or 'bedstre' may allude more particularly to the Virgin having given birth to her first-born son in a stable with only the grass or herbs of the field for her bed. In fact we know that in earlier times such materials were freely used and the soft puffy stems of this particular plant with its golden blossoms would have exactly adapted it for connection in legend with the Nativity."

THE SENSITIVE SENSITIVE-PLANT.—The gullibility of the public regarding plants appears to be boundless. No account is too absurd to be believed and the more horrendous it is the better. The reporter who finds legitimate news scarce can always depend on the plant world for something startling and ignorance of his subject is an asset rather than a handicap. Herewith is a choice bit culled from a longer article that has been going the rounds recently. "Even though you know how cruel some plants can be, you will hesitate to retaliate when given an opportunity. There are many of the fascinating so-called sensitive plants. You can torture them by merely touching them, shaking a leaf or jiggling the whole plant. They writhe and shudder perceptibly, and you almost expect to hear them moan in their agony. One plant, a *Mimosa pudica*, of the Mimosa family, must have wished itself back in Brazil, whence it came, the morning we stood around and tantalized it. We pinched and tickled and shook its long leaves with their separate rows of petals, until they closed together and dropped in utter dejection. If you touch the extreme tip of the leaf, the petals will start closing all the way up. If you shake the plant, it will twist and shiver and recoil, showing plainly its irritation and pain and annoyance at your treatment."

We wonder if the irritation and annoyance expressed by the plant was not occasioned by having its leaflets called petals. And a further mystery is how the reporter got the item past the editor.

WILDFLOWERS TO BE PICKED.—The movement for protecting the wildflowers is complicated by the fact that there are many blossoms that may be picked in any quantity without protest from anybody. Among these are all the plants with brilliant blossoms that are so ubiquitous as to be classed as weeds, such as the brown-eyed Susan (*Rudbeckia hirta*), the marguérite or daisy (*Chrysanthemum leucanthemum*), bouncing Bet (*Saponaria officinalis*), toad-flax (*Linaria vulgaris*), coreopsis (*Coreopsis tripteris*), ditch sunflower (*Bidens trichosperma*), New England Aster (*Aster nova-angliae*), smooth aster (*A. laevis*), and many allied species, Joe-Pye weed (*Eupatorium purpureum*), tansy (*Tanacetum vulgare*), spiderwort (*Tradescantia pilosa*), Queen Anne's lace (*Daucus carota*), white snakeroot (*Eupatorium urticaefolium*), prairie sunflower (*Helianthus laetiflorus*), besides clovers, thistles, milkweeds, goldenrods, and a large number of others. It would clarify the flower-protection movement if a list of all those which might reasonably be gathered were made.

LARGE TREES.—In *Forest Leaves* we find records of some trees of unusual size in Pennsylvania. A white oak in Indiana county measures 22½ feet in circumference and is 92 feet high. It once had a much wider spread than at present, but a telephone company removed one of the larger limbs. We wonder sometimes whether there is any form of vegetation on this planet that a telephone company would respect. In Huntingdon county is a swamp white oak that is 19 feet and 10 inches around at a foot above the ground. The trunk is 40 feet high be-

fore it produces a limb. A near-by resident is said to have twice tried to buy the tree in order to cut it up into shingles, which indicates that some people have no more sense than a telephone company. A wild black cherry 12 feet in circumference a foot from the ground is standing in Juniata county. Lumbermen have several times tried to buy this tree but thus far the owner has refused to sell. It is reported that Massachusetts has a law looking to the preservation of her remarkable trees, which permits the state forester to mark such specimens and then they may not be cut down without consent, even if standing on private lands.

SOARING BIRDS.—Birds seldom soar in cloudy weather, or in cold regions, or in the winter. Soaring is only possible when the earth is heated by the sun's rays. When the earth is heated, the warm air just above it rises and if the heating is intense or long continued strong columns of air rise for very considerable distances, especially over small hills. In these ascending columns of air the birds find a breeze of considerable strength blowing directly upward, the force of the ascending air being sufficient to keep them up, but to enable them to glide continually downward, yet at the same time rise. Birds soar in circles in order to keep within the ascending column of air; if they fall over the edge of the column they begin to flap in order to get back again. You sometimes see a hawk do this. Soaring is a very popular pastime of the large birds in the drier regions of the tropics, and in some places, as in Egypt, hundreds of birds of many sorts may be seen soaring together. One of the most expert of the soaring birds, is the great clumsy-looking adjutant of India which by many is supposed to sleep while soaring. In warm regions the appearance of clouds which obscure the sun promptly weakens the force of the ascending columns of air and soon causes all the soaring birds to flap and return to the ground.—*Austin H. Clark, in Scientific Monthly.*

CUPID'S DART.—The *American Flower Garden* mentions as a garden perennial, "Cupid's dart" (*Catanache coerulea*)—a kind of everlasting—"flowers like a blue daisy." *Katanache* is the ancient Greek name meaning "love-compelling" the plant having supposed potency as a love philtre, "cupid's dart" being the English equivalent. Another version comes to us through the French, given in the Century Dictionary, viz; "cupidone" (in French, cupidon). "Cupid's dart" has a place in "Standardized Plant Names" but "cupidone" is not given, naturally, as each plant is to have a single name. "Cupid's flower" in the Century Dictionary is the cypress-vine (*Quamoclit*) but I do not know that this name is used in America. —*A. B. Lyons, Detroit.*

THE DEVIL'S CLUB.—There is probably no shrub growing in the mountains more unpleasant to meet than devil's club (*Fatsia horrida*). This plant consists of a long stem with an umbrella-like cluster of leaves at the top, and is so beautiful to look upon that it is not until one unsuspectingly comes in contact with it that his good opinion is changed. No plant is so well armed to fight the battle of existence, for there are long spines on every part of it, even the leaves bearing their burden of the battle. These spines seem to be poisonous to some extent, but affect some more than others. An injury from them does not hurt much at first, but after a couple of hours the injured part becomes very sore, and often swells, and this condition will sometimes last for several days. The plant is seldom if ever met with in the Rockies, but in the Selkirks it grows luxuriantly. Its broad lobed leaves gracefully poised remind one of tropical vegetation. The greenish white flowers in small umbels arranged in a panicle at the top of the stem are inconspicuous, but in the fall the bright red fruit held in stiff cone-like clusters above the leaves make it a thing of rare beau-

ty. An occasional plant may sometimes be met along the trail in a scattering forest, or it may stand sentinel along a mountain stream forbidding approach, but it is more often found in basins or on hillsides forming almost impenetrable tangles. When growing near water it often reaches a height of twelve feet with leaves a foot in diameter. On hillsides however, the leaves are not so large and the plant reaches a height of only six or eight feet.—*F. A. MacFadden.*

KING VIDOR.—If any of our readers know of a western plant called "King Vidor" he is invited to speak up at once. One of our Agricultural Colleges has been asked for the scientific name of the plant but without a specimen it is impossible to give it. The plant is reported to bear a blue flower and to be poisonous to sheep, which sounds as if it might be an *Astragalus* or a *Lupinus*, but at present nothing is known about it and further information is much desired. Dr. A. B. Lyons, author of "Plant Names" notes that in Norse mythology Vidar was the son of Odin and a giantess but while this is undoubtedly the source of the name, the plant it is attached to is still unknown.

EDIBLE HAWTHORNS.—The fruits of all our hawthorns (*Crataegus spp.*) are edible if one cares to use them but most species have such hard, juiceless, or unpalatable fruits that they are seldom eaten except "by boys and pigs" as Asa Gray wrote of the may-apple (*Podophyllum peltatum*). One exception to this statement must be made in favor of the red haw (*Crataegus mollis*) so abundant in the Middle West. This might fairly be classed as a useful fruit. Jelly is frequently made from the small bright red apples it produces and the wayfarer finds them a pleasant addition to his fare. An Asiatic species, *Crataegus pinnatifida*, according to E. H. Wilson, has been culti-

vated in orchards for centuries for its fruits which reach the diameter of more than an inch. The fruits of *C. mollis* vary greatly in size and flavor. If we did not already possess better fruits, it is likely that this tree would long ago have been taken over for improvement. The flowers are plentiful and the crop nearly certain.

MISSION OF THE SCIENTIST.—We have recently had a number of aspersions cast upon the scientist who is represented as striving to tear down everything that the world holds sacred. As a matter of fact, the scientist is in search of truth and truth, only. He is not overly concerned as to how the truths he discovers will square with anybody's pet theories or beliefs. This is neatly summed up in a paragraph from the *New York Times*. "To contribute successfully to the progress of science requires more integrity of mind, more purity of heart, more unselfishness, more devotion, more unworldliness than any other kind of human activity. The work is harder, the standards are higher, the discipline is more rigorous than men like Mr. Bryan have ever dreamed of demanding of themselves. There are quacks and knaves among scientists, to be sure, but among the men who are really doing the work of science, a moral code exists and is followed, which would put the rest of us to shame. The search for truth—that is a simple phrase, but the labor, the care, the exactness, which it requires are something beyond the comprehension of a man who has lived by flamboyant speeches. Has anyone ever conceived the quality of soul that is needed to induce a man to work thirty years over a microscope and then give his results, without a penny for himself, to all mankind?"

THE LARGE-LEAVED ASTER.—In fence-corners beneath the green tents of the American linden and by decaying stumps, close neighbors of the fringed polygala, we find

the large-leaved aster (*Aster macrophyllus*) but the largest and finest patches we find in the rich leaf-mold near brook-banks and on rocky hill-slopes. When the dandelion's leaves become too tough for "greens" the country folk gather the thin and delicate "rough-tongues" as they call them, and cooking them with a few sprigs of black mustard and horse-radish for flavoring, acquire an appetizing and healthful dish. In more sunny situations the leaves are thicker and coarser for the plant is variable to a great degree. In large beds of leaves, a few will be found in flower. But the size and quality of the flowers make up for their lack of numbers. The clear color of the pale blue or lilac tones, which match the far-off horizons, are very suggestive and of an exquisite tenderness. It is indeed a "fall aster," coming in September when light frosts have already left their mark on the lower leaves of the August-flowering varieties in less sheltered spots. —*Lucina H. Lombard, Gorham, Maine.*

AN IRISH PLANT NAME.—Recently I happened on an unfamiliar name which was mentioned in a guide-book to Ireland. Of course it is not an "American" plant name yet it may have easily come over as so many English popular names have done and so may possibly be met with, even in America. The plant which was spoken of as "bog-cotton"—"covering as with a snow-fall the surface of the marsh" was said to be called in popular parlance "light-o'-love" or "light-of-love." I do not find this use of the name recorded in any of my books. Of course the plant meant must have been an *Eriophorum.* This reminds me that among English synonyms of *Eriophorum,* probably without discrimination of species, is "draw ling" or "pull ling" which seems to mean that this plant grows in localities favorable to the growth of ling or heather —at least that is what suggests itself.—*Dr. A. B. Lyons, Detroit.*

VIRESCENCE IN RUDBECKIA HIRTA.—For three successive years, Mr. E. J. Smith has found near Sherborn, Massachusetts, an abnormal form of the yellow daisy (*Rudbeckia hirta*) which is sufficiently striking to be worth mentioning. Instead of the usual daisy-like inflorescences the abnormal specimens produced round, green, fuzzy objects like tiny pincushions which were very evidently the ordinary flowerheads gone wrong. Excellent specimens of this curious form were recently received from Mr. Smith and an examination of them reveals a very interesting case of "frondescence." In extreme cases the whole flower-head has turned to leaves and the bracts and chaff have shown their sympathy in the matter by an exuberance of tissue that adds considerably to the general effect. Often the outer circle of chaff has expanded into small, five-parted leaf-like parts and all the others are larger and hairier than usual. The individual flowers, however, exhibit the most remarkable features. The corolla and the essential organs have turned to separate linear leaf-like parts many times multiplied, though none, of course, are to be clearly seen without the aid of a lens. Such plants are naturally incapable of producing seed but an occasional flower-head on affected plants has flowers of the conventional type so that it is apparently possible to reproduce the abnormal plants from them. In transition heads, the disk flowers are usually normal, but the ray-flowers are green. The abnormality appears to have been reported occasionally but without a name. To distinguish it in future it might be called *Rudbeckia hirta*, forma *frondosa*. The type locality is at Sherburn, Mass., and the collector E. J. Smith.

AGE AND THE SCIENTIST.—When is a scientist old? So long as his mind is directed forward, so long as his past achievements are to him incidental, so long as he is thinking of what he is going to do instead of what he has done, he is young. When he begins to emphasize those things that have been accomplished, when his mind is facing the past instead of the future, he is getting old.—*A. S. Hitchcock in Science.*

EDITORIAL

It is reported that Dr. C. S. Sargent, Director of the Arnold Arboretum, recently sent an experienced collector to unexplored parts of Tibet in search of new plants, but our Federal Horticultural Board at Washington, denied him permission to import such desirable specimens, even if carefully inspected upon arrival by Government scientists, for fear of introducing insect pests. To such a state of mind are those five entomologists that comprise the Board reduced, by their fear of common bugs. The other hundred million of us, do not share in their hysteria, but their word is law and so five men who are not primarily botanists or plantsmen, are able to tell the rest of us what we may grow in our gardens. Dr. Sargent has regretfully ordered his plants sent to England, where there is no meddlesome board to circumvent but we are deprived of valuable specimens. The law under which the Federal Horticultural Board works is a good one, designed to prevent the entrance of insect pests, but none of its provisions authorize such autocratic powers as these five men have arrogated to themselves. Instead of devising ways of keeping the insects out, they seem more concerned with keeping plants out. The chairman of the Board states that the only safe thing is a policy of exclusion of all plants not absolutely essential. He also refers to the "mere personal gratification of thousands of individuals" who might wish to import plants if he would permit it. The real point of the matter appears, however, when we read in the Board's official statements that the whole spirit of the quarantine is to make this country independent of foreign supplies as soon as possible. Beginning with an

attempt to exclude insects the movement has become a drive that looks very much like a boost for certain infant bulb-growing industries not protected by a tariff. Among botanists of national reputation opposed to this high-handed method of interpreting the law, are Dr. L. H. Bailey, author of numerous horticultural texts, Dr. N. L. Britton, Director of the New York Botanical Garden, Dr. George T. Moore, Director of the Missouri Botanical Garden, Dr. C. Stuart Gager, Director of the Brooklyn Botanic Garden and a host of others; in fact, not a botanist of recognized standing endorses the action of the five entomologists. At the end of the present year, further importation of all narcissus and daffodil bulbs will be excluded and our gardens will be poorer by some hundred million bulbs that we now import annually. It is hoped that Dr. Jardine, the new Secretary of Agriculture, may be moved to some effort to curb the autocrats on the Board. All who can bring pressure to bear in favor of a more liberal interpretation of the law should help by protesting to their representatives or to the Department of Agriculture. The idea of getting our bulbs from Canada through a floral bootlegger is repugnant to a free people.

* * *

One of the important objections brought against the theory of evolution in Darwin's time was that if the theory was correct, there ought to be a number of links connecting one species with another, whereas, no such links were to be found. The great trouble, however, was that the scientists of that day regarded each species as fixed and unvarying—at least such variation as occurred was thought of no significance. Had they looked a little closer they might have discovered that the links were not missing as supposed. It is true that there are probably no two species in existence that are connected by a complete chain of intermediate forms, but there is no question but

what a large number of species have produced from one to half a dozen varieties any one of which might become a species and in many cases have been so regarded by the close student. It was originally the custom to make the specific descriptions broad enough to include all variations, but now that definition and description have become more precise we discover that a large number of minor forms may cluster around a central type and to all intents and purposes, the "missing links" are missing no longer.

BOOKS AND WRITERS

Anybody who feels that we are slow in answering their letters should not lose hope. * * * It sometimes takes a long time for them to get here. * * * In July we received a card that was mailed in southern New York in 1908! * * * The postman did not say where he had been for all those seventeen years. * * * Instead of apologizing for the delay the Government demanded an extra penny. * * * It was a picture post-card on which the rate has been raised since the card was mailed! * * * Ours is certainly a thrifty Government! * * * Dr. Gress of the Pennsylvania Department of Agriculture says there are at least seventy kinds of wildflowers in his State that need protection. * * * He issues a fine little bulletin (No. 399) on the subject which may be had upon application. * * * He is located at Harrisburg, Pennsylvania. * * * *For Better Delphiniums*, which describes itself as an "international delphinium review," has dropped the "For" out of its title. * * * Sounds better now. * * * We have seen larkspur blossoms from the Pacific Coast that were about as big as silver dollars, but the florists tell us we cannot hope to produce such flowers in the Middle West. * * * How about it, *Delphiniums*? * * * A publication from the University of Illinois on white snakeroot poisoning seems

to be somewhat belated. * * * That *Eupatorium urticaefolium* is in some way the cause of "trembles" or "milk-sickness" has been known for a very long time, but all white snakeroot does not cause trembles. * * * It is one of the commonest weeds in northern Illinois where much butter and milk are produced. * * * Still, the barberry eradicators are about out of a job. * * * Pulling up white snakeroot ought to give them employment for a long time. * * * The plant is extensively used in decorative planting; prepare to sacrifice your plants! * * * The *Torrey Bulletin* after more than half a hundred volumes has decided to drop back to nine issues a year. * * * We see that the American Gladiolus Society has unanimously agreed to call their plants by their common names. * * * A single plant is to be a gladiol-us, and a handful are to be gladioluses. * * * It is a wise decision. * * * Everybody ought to know that there are irises, phloxes and narcissuses.

* * *

A long time ago, Asa Gray called attention to the fact that the floras of eastern Asia and eastern America have numerous elements in common, and gave a reasonable explanation of the phenomena. Now a successor in his field, Dr. M. L. Fernald, after an extended study of the plants of the Gaspe peninsula and the adjacent islands in the Gulf of St. Lawrence, has found a similar problem in the distribution of certain plants which are found in this region and again on the Pacific Coast but nowhere between. All such plants are species of the far North and the opinion usually held is that they are species that were forced south during the glacial period and when warmer climate returned were stranded on mountain-tops and similar places. Others hold that the plants have reached their present positions since the glacial period, but there

seems to be no known method of migration that would account for this peculiar distribution and the author after reviewing all the evidence concludes that the plants never migrated at all but held their positions in sheltered places throughout the glacial period. They are the original Old Settlers and have seen their relatives exterminated over vast stretches by the swing of the ice sheet across the continent. Being conservative forms they have not spread widely since, but have held their own in spite of the colonizing younger species that have pushed in. The complete data has been published as No. 2 of the "Memoirs of the Gray Herbarium of Harvard University."

Professor Marie-Victorin of the University of Montreal has recently issued in French a very interesting monograph on the forms of *Lycopodium, Selaginella* and *Isoetes* inhabiting the Canadian Province of Quebec under the title "Les Lycopodiees du Quebec et leurs formes mineuers." A large number of the fernworts delight in cool and wooded regions and in the climate and soil of Canada have originated or perpetuated numerous variations which form the basis of this report. There are, to be sure only eleven species of *Lycopodium* in that part of the world but the author has distinguished more than thirty forms or varieties and with rare restraint he has refrained from describing them as species. The subdivisions of a species seldom interest anybody except the systematist but this manual will make possible the distinguishing of the forms by all who desire it. The publication is illustrated by numerous maps showing distribution as well as by drawings of critical forms. Complete keys to all are included. The monograph is published by the University of Montreal and costs $1 in paper.

Fossil remains indicate that the oak family began its career as far back as the Cretaceous with a much wider distribution than it has at present. Oaks used to grow

in the islands of the Pacific and various other places, but now they are nearly all in the Northern Hemisphere. It is commonly thought that there are about 200 species of living oaks, but according to a "Monograph of the American Oaks" by Dr. William Trelease, published as Vol. XX of the "Memoirs of the National Academy of Sciences" there are no fewer than 371 species in our part of the world alone. The designation "American," however, must be taken in a wide sense as comprising the entire Western Hemisphere. The United States and Canada together have only 94 different species while Mexico has three times as many. Of the reported 371 species, 173 are described as new by the author. The oaks are known to hybridize freely and many forms originally described as distinct species are now known to be hybrids. The author gives a list of more than half a hundred of these. Everywhere the oaks tend to divide into two fairly characteristic groups: the red oaks with bristle-tipped leaves, biennial fruits, and dark, deep-ridged bark; and the white oaks with leaves lacking bristles, annual acorns and light, flaky bark. Of the latter group there are said to be 177 species while of red or black oaks there are 189. In the live oaks, the leaves may remain on the trees for at least two seasons and nearly all the species show a tardiness in dropping their leaves. Though dead the leaves often remain on the trees until spring. In the Monograph, all the American oaks are carefully described and all the tropical species are illustrated, more than half for the first time. Including hybrids and species there are more than 400 quarto plates and these are accompanied by 250 pages of text. The red oak, so long known as *Quercus rubra* is now *Q. maxima* while the Spanish oak falls heir to the name of *Quercus rubra*. Such are the vagaries of a nomenclature that insists upon strict priority. It has required a vast amount of painstaking work

to bring this study of oaks to completion and the author is to be felicitated upon the thoroughness with which he has carried it out.

In 1872, through a bequest of James Arnold a merchant of New Bedford, Massachusetts, Harvard University received approximately $104,000 for the purpose of forming an arboretum. Beginning with 125 acres at Jamaica Plain set apart by the University, there has since been added sufficient other lands by the City of Boston, the University and other friends, to double the area and this now forms the great tree garden known as the Arnold Arboretum. A year after its founding, Dr. Charles Sprague Sargent was elected director and under his fostering care it has continued to the present. The area is a typical piece of New England landscape and there is now growing in it, practically all the woody plants that will endure the climate. Not only has the Arboretum brought together the woody plants of our own land, but in the search for new species, it has dispatched numerous expeditions to out-of-the-way parts of the world and the plants thus discovered have been distributed to scientific institutions in all parts of the world. The idea back of the institution, however, is not the mere assembling of a collection of woody plants but as E. H. Wilson says in "America's Greatest Tree Garden," a new book about the Arboretum, "it seeks knowledge for the sake of knowledge." In search of this knowledge some astonishing things have been brought to light. For instance, "no plants from the Southern Hemisphere, not even from the high Andes, southern Chili, or the higher mountains of New Zealand have proven hardy at the Arboretum." Dr. Wilson's book is a book about the Arboretum but it is neither a guide-book nor a history of the institution. It is a sort of cursory survey of the most pleasing groups

of plants in which various beautiful trees and shrubs come in for an approving nod. One looks in vain for a plan of the Arboretum or for a comprehensive account of the plants in it. In the main the book seems to have been issued to call attention to the important species in the garden and in this it is most successful. The chapters, eight in number, bear such titles as Spring Pageantry, Autumn Glory, Lilac Time, Azalia Carnival and Winter Beauty. Most important of all are the fifty illustrations from photographs of flowering specimens and beautiful scenes. Within the last few years a number of arboretums have sprung up in our country and this book will be of interest to a wide circle of readers. There are 118 pages of text and the price is $3. The Stratford Company of Boston are the publishers.

The fame of Fabre "the incomparable observer" as Darwin called him, comes primarily from his work with the insects, but he wrote numerous volumes on other subjects and one of these has been translated into English by Bernard Miall and issued by the J. B. Lippincott Co., of Philadelphia under the title of the "Wonder-book of Plant Life." The book is a popular account of the phases of botany usually touched upon in the beginning course but told with a volubility that would be out of place in the ordinary text. Doubtless owing to the fact that this is a translation of an old book, the terminology in some parts is somewhat antiquated as indicated by "foliole" for leaflet and "spongiole" for the tip of the root. The book follows the British conception that plants differ from animals in using inorganic materials as food, although it is now well-known that plants cannot use such materials until they have been turned into food by the chloroplasts. The first 275 pages of the book discuss the organization of the plant-body and all its vegetative functions while the second

part consists of an account of the flowers and fruits and the role they play in the reproduction and distribution of the various species. The book should do much to open the eyes of those to whom the more technical studies in botany are denied. There are nearly 200 illustrations.

The thistle is an idealist among plants. Its dreams would be worth recording. When its season of bloom is past its leaf-lances rusted and broken—when seemingly its fortunes are at the lowest ebb—then look out for the shining fleets of its seeds. Through all the fine autumn weather these cruise about, above the fields, over the village streets, even entering the houses through doors and windows. On goes the winged hope of the thistle, flashing white in the sunshine but dark in the shadow.—ANON.

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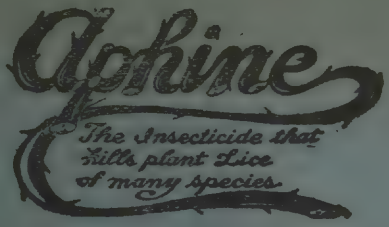

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Volume XXXII

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THE EDITOR

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VOL. XXXII. JANUARY, 1926. No. 1

The pulpy acorn, ere it swells contains
The oak's vast branches in its milky veins;
Each ravelled bud, fine film and fiber line
Traced with nice pencil on the small design.

A QUARTER-CENTURY OF BOTANY

By WILLARD N. CLUTE

BOTANICAL magazines that have existed for a quarter of a century are rare, especially in our part of the world. Only four in America have this distinction and three of these are not independent publications but are official organs of various societies which provide the funds to carry on, regardless of a fairly common annual deficit. It is probably a fact that the only botanical publication that has paid its own way throughout its existence is the *American Botanist*.

The completion of twenty-five years of uninterrupted publication by such a journal seems to be an event worth some slight recognition, and as the quarter-century draws to an end we pause for a brief contemplation of its history. The *American Botanist* began publication in July, 1901, as a 16-page monthly magazine with two volumes to the year. At the end of the thirteenth volume, it adopted the present quarterly form with a single volume to the year. This accounts for the fact that though this is the twenty-fifth year, the volume is the thirty-second. The change to the quarterly form was not entirely to the liking of its readers but was made necessary by the ever increasing demands upon the editor's time. Rather than delegate the

work to assistants, he preferred to avoid so many mailings and printings and make up the loss of numbers by additional pages in four issues.

During the twenty-five years of this magazine's existence, conditions have steadily become less favorable for the smaller botanical publications. The cost of publishing has not only more than quadrupled, but the advent of radio, movies, autos, and jazz have provided amusement for many that otherwise would have taken up scientific pursuits. In consequence, numerous botanical publications have been obliged to give up the struggle. Among these we note, in passing, such representative magazines in their day as *Meehans' Monthly, The Forester, Floral Life, Gamophyllus, Muhlenbergia, The Mayflower, Arboriculture* and *Nature-Study Review.* Others have retarded their demise by reducing the number of pages, by publishing less frequently, or by greatly increasing the subscription price. The *American Botanist,* alone, continues along the line originally mapped out for it. That the precarious hold on life of scientific publications is not entirely imaginary, is seen in the fact that D. Appleton & Co. were losing more than $10,000 a year on *Popular Science Monthly* when it ceased, and that two scientists supported the journal *Science* to a total of about $80,000. It was recently stated in print, that "there are, perhaps, five hundred journals and proceedings devoted to the publication of research work in America, not one of which pays its expenses on a regular business basis."

Twice before, an "American Botanist" had been launched by others, but in both instances only a few issues were printed. The number of people interested in the philosophical side of botany has always been much too small to promise any great reward for even the most successful magazine in this field. However, having founded the *Fern*

Bulletin, the *Bryologist*, the *Plant World*, and others, the editor was under no delusions as to the financial returns to be expected from such a publication. It was his impression that enough supporters could be found to warrant a publication of this kind and in this he was not mistaken. In lieu of riches he has received the commendation of a large number of people whose opinion he values. Through his pages he speaks to a cultured and intellectual circle of readers and editing the magazine has been a continued source of pleasure. Many of his readers he has met personally and counts as friends; others he knows almost as well through many years of correspondence. It is a further satisfaction to know that he has brought together enough others interested in his favorite phases of botany to warrant continuing the magazine as long as seems desirable.

Just how far the magazine's influence reaches may also be interesting. It goes to such remote parts of the world as South Africa, India, China, Japan, Hawaii, Alaska, the Canal Zone, West Indies, Palestine, Russia and most of the other European States. The original subscription list, now known as the Patrons List, contains the names of nearly all the prominent botanists in America and the library list includes every State in the Union save one.

In getting out the magazine for so long, we have not been without trials and tribulations. Not only has it often been edited at long range—a thousand miles or so—but once an entire edition was destroyed by an incendiary fire in the office where it was printed, and once a dishonest postman systematically robbed it for an entire subscription season before he was discovered and given a nice striped suit with room and board at Leavenworth. Lazy printers have failed to appreciate the necessity of our appearing on time and paper-makers have been slow in

making deliveries, but through it all the magazine has never skipped an issue or failed to make good on its promises.

Although we have had no financial assistance except what naturally returns in the way of advertisements and subscriptions, the editor has had much and greatly appreciated assistance on the literary side, all of which—like his own efforts—has been given willingly to advance the general good. The future of the magazine, therefore, seems promising. The editor enjoys the preparation of copy as much as ever, the subscription list is the largest in its history, and correspondents and contributors keep us advised of new facts and ideas. We set out on the second quarter-century with high anticipations. We know of several ways of avoiding increased costs that we have not tried yet, and we have no fears on that score; but it cannot be denied that with a larger income we could make a bigger, though perhaps not a better magazine. Anyway, we would like to try it, but this can happen only when our subscription list increases, or somebody subsidizes us for "the good of the order." Looking over what has been accomplished, however, we may perhaps be pardoned for some spirit of elation and for presenting ourselves with the modest bouquet concealed in the foregoing paragraphs.

THE WITCHERY OF WITHERED WEEDS

By Adella Prescott

IT is quite the fashion—a fashion set, perhaps, by the guardians of our roadsides—to consider all weeds objectionable, and to decry in no doubtful terms the carelessness that permits them to ripen their seeds and sow them broadcast over the surrounding territory; but while I admit and deprecate this carelessness, deep in my misguided heart is a little thrill of joy when I unexpectedly come across a tangle of dry and leafless weeds. They suggest so vividly the glory that has departed with the long sunny days of summer.

In spite of the general disapproval of weeds as features of the landscape, there is now and then a person who gives them a meed of admiration when they are in full flower; but I have yet to find one who recognizes their beauty after their blossoms have fallen and the leaves have crumbled and blown away. Of course it is a beauty of line, exclusively, but it is often so marked that the eye, having once seen it, instinctively seeks it out wherever the plant is found and eagerly looks for it among other plants.

A very short distance from my home—in the same block, in fact—is a large place that has been abandoned for two or three years, only. From a well-kept garden it has, in a surprisingly short time, become a tangle of weeds; but deplorable as their condition is in the heart of a thriving town it is not without charm. Buttercups, daisies, fleabane, asters, goldenrod, and others grow with vigor and enthusiasm, and it was here that I first observed the exquisite lines of some of our common weeds when the stems are unconcealed by coarse and disheveled leaves.

Few people would look for beauty in the burdock, though much beloved furniture is made from its prickly burs, but when the great leaves have fallen there is much of stately grace in the arching branches of the erect stalks that rise four or five feet above the ground, while the lovely lines of the flowering heads of the goldenrod have only to be seen to be accorded enthusiastic admiration.

The beauty of the native aster is different in type but equal in charm. After the flowers have faded and the seeds have flown, the withered calyces remain and, catching and holding the damp snowflakes, cover the plant with a fresh and sparkling beauty closely akin to that of flowers. Other weeds have other and varied attractions and the garden plants share them to a large degree. The thoroughgoing and systematic gardener who cleans up his garden conscientiously in the fall, loses much that would be interesting and attractive during the winter days.

A walk in the country is full of pleasant surprises and the garden never looks bare or dreary after one has learned to look for the beauty of the withered weeds and other plants which lift their heads above the snow.

A BOG FLORA OF NORTHERN IOWA

By B. O. Wolden

RESTING on a wide gravel plain considered by geologists as the bottom of an ancient glacial stream through which the Des Moines river now winds its way from Minnesota through Emmet county, Iowa, are a series of so-called hanging bogs. Some of these are small, covering only a few square rods and hanging up in the hillsides or on the higher slopes, while others are much more extensive and are situated on the more gentle slopes toward the river.

These bogs are different from the stretches of peat-sloughs and other marshes which are common in many localities throughout northern Iowa. They are not lowlands or marshes surrounded by higher land but are located high above the flood-plain of the present river. At their lower border there is generally a more or less abrupt drop to the dry ground between them and the river. Some of them are decidedly highest in the center and slope down to lower dry ground on all sides. The finest of these bogs are full of hummocks and are covered with a dense growth of sedges, but others are very wet with water appearing at the surface even in the driest seasons. The more scanty vegetation growing in this ooze is composed of typical bog-plants, many of them very rare in this region.

The bogs are of particular interest to the plant student because they have a characteristic flora that is distinct, both from the wholly aquatic plants and from the dry land flora. The flora of the wettest bogs, especially, is quite different not only from the general flora of the region, but also from the lowlands and marshes of the surrounding country. Several plants are found here that are peculiar to the cold bogs of the northern United States and Canada and which barely come within our limits. A few have not been previously reported from Iowa.

It is not the purpose of this article to list all the plants of the bogs. We shall only list a few of the rarer plants such as are, in this locality, entirely or mainly confined to these areas, and a few others which may be either rare or common throughout but which are very conspicuous in the bogs.

The wettest and most striking bog lies some two or three miles south of the Iowa-Minnesota line. With few exceptions the plants mentioned are plentiful here. One

of the rarest is the little fen orchis (*Liparis Loeselii*). This plant, only a few inches high, has a raceme of small greenish-yellow flowers in June. It is a very rare plant in Iowa. A little more frequent, locally, but perhaps still rarer for the State, is another member of the orchis family, the hooded ladies tresses (*Spiranthes Romanzoffiana*). It blooms in July and the whitish flowers arranged in a spirally twisted spike are very fragrant. As far as the writer has been able to ascertain, this is the first record of the species for Iowa. It resembles very much its near relative the nodding ladies tresses (*S. cernua*) which here grows infrequently on low prairies, blooms in September and October, and has also very fragrant flowers.

Another plant not previously reported from Iowa, but which is quite frequent in our bog, is a species of arrow-grass (*Triglochin palustris*). It is a little rush-like plant with spiked inconspicuous flowers. Its range, as given in the manuals, is from Greenland to Alaska, south to New York, Indiana and Colorado. Also in Europe and Asia. Another species, *Triglochin maritima*, which grows with the above-mentioned plant, and is more abundant here, is also a rare plant for the region.

Rynchospora capillacea is a species of beaked-rush belonging to the sedge family which is very abundant in some of these bogs. The writer finds no record of its having been previously reported from Iowa. The three-square rush (*Scirpus Americanus*) with triangular leafless culms is also plentiful. While it is not otherwise found in marshes in this vicinity it occurs locally throughout the State. In one of the bogs is found the green orchis (*Habenaria hyperborea*), another plant of northern bogs which occurs rarely in eastern and northern Iowa.

Perhaps the most welcome stranger of all is the lovely brook lobelia (*Lobelia Kalmii*). Stranger it is, for, like the others, it is a northern plant barely coming within our territory. It is a very lithe and graceful little plant with small delicate flowers of a light blue color, borne on thread-like pedicels. This little fairy is not afraid of getting its feet damp for it grows in the wettest places and blooms from July until frost. Restricted to a shady corner we find a member of the carrot family, the cut-leaved water-parsnip (*Berula erecta*). This species occurs rarely in northwestern Iowa.

We find two species of aster, one of which inhabits the wettest places but seems rather out of place in the ooze. This is the rush aster (*A. junceus*). It is near the southern border of its range. The pale-purple flowers of this species compare favorably with those of the many other showy species of this handsome genus. The flat-topped white aster (*A. unbellatus*) is a more common species but it is also restricted to boggy or springy ground, perhaps preferring somewhat firmer situations than the other.

According to the range given it in the Manuals, the smaller fringed gentian, (*G. procera*) also reaches its southern limit in the bogs of northern Iowa. It is not infrequent here. It is a handsome species though smaller than its celebrated relative the large fringed gentian (*G. crinita*), which is very rare in this region but occurs sparingly in bogs near Estherville. A bog-loving species of gerardia (*G. paupercula*) occurs infrequently. A species of water starwort (*Callitriche palustris*) is a rare plant in this section, but it is found in abundance in one brook having its source in a bog.

This list would not be complete without mention of two species of willow which are here only found in bogs.

Clumps of the slender willow (*Salix petiolaris*) are quite frequent. It is not generally over five feet high. Very rare and found only in one place is the hoary willow (*S. candida*) here only two to three feet high. We find two more willows but they are not restricted to the bogs. Pussy willow (*S. discolor*) is frequent locally and Bebb's willow (*S. Bebbiana*) also occurs.

The bog flora includes a number of plants that are not peculiar to the bogs, being frequent in low ground generally, and we shall briefly mention some of the most conspicuous. Grass-of-Parnassus (*Parnassia Caroliniana*) is said to have been once common on low prairies but it is now found only in the peat bogs where it is often very abundant. The well-known marsh marigold (*Caltha palustris*) is also common in the bogs as well as in the low lands along the Des Moines river. The lance-leaved loosestrife (*Sterionema quadriflorum*) is abundant and its yellow flowers are much in evidence. The spotted Joe-Pye-weed (*Eupatorium maculatum*) is right at home in the wettest places. The rush-leaved goldenrod (*Solidago Riddelli*) which is a quite distinct appearing species among the goldenrods is also quite common. The purple-stemmed aster (*A. puniceus*) is abundant in places but prefers the firmer ground around the wet places.

In peat-bogs some twenty miles east of this locality, which are now drained, a few other northern bog-plants used to be found. The rarest of these was *Scheuchzeria palustris* of the arrow-grass family, the buck-bean (*Menyanthes trifoliata*) and the little bog willow (*Salix pedicellaris*). These might be looked for here but so far they have not been found.

THE MEANING OF PLANT NAMES—XXV.

SAXIFRAGACEAE

By WILLARD N. CLUTE

ONE seldom regards the Leguminosae, the Rosaceae and the Saxifragaceae as being closely related. Superficially the flowers have few points of resemblance, but the fundamental plan is the same and the three groups make up the bulk of the important order Rosales. Of the three, the Saxifragaceae are by far the least conspicuous and the blossoms of most are too small to render the plants useful for decorative purposes. The whole group is so lacking in strong family characteristics that it often fails to hold together in the minds of botanists and the group is often split up into several smaller families notably the Hydrangeaceae, Parnassiaceae, Iteaceae, and the Grossulariaceae.

The obscurity that attaches to the group as a whole follows on into the meaning of the typical group. *Saxifraga* certainly means "rock-breaker" but authorities are by no means agreed as to whether this refers to reputed medicinal properties or whether it means literally a breaker of rocks. Since several of the species are fond of growing in rocky crevices, I incline to the second derivation and a desire to let others settle the question to suit themselves.

As in most plant families, several genera are named for botanists eminent in their respective fields. In some cases, however, the species are so little known that the honor conferred in the name of the genus is at best a doubtful one. A single species in our region, forms the genus *Sullivantia* which commemorates William S. Sullivant a distinguished pioneer student of the mosses. Our only

society for the study of mosses—the Sullivant Moss Chapter—is also named for him. *Boykinia* is another inconspicuous genus with one species in Eastern America to keep alive the memory of Dr. Boykin an early Georgia botanist. J. H. Heucher who flourished near the end of the 17th century and part of the 18th, is remembered in the genus *Heuchera*. *Philadelphus* is for Ptolemy Philadelphus one time king of Egypt. The name is said to have been applied to the genus for no apparent reason, but if given during the lifetime of the ruler named, the one who bestowed it doubtless thought he was amply justified.

From kings we turn to the abode of the gods and find that the Greek Physician, Dioscorides, who lived at least three centuries after Philadelphus, named a little plant *Parnassia* in reference to Mount Parnassus. Incidentally he showed how poor a botanist he was by calling his plant "grass-of-Parnassus." The plant is of course far from being a grass. It is in fact so closely related to the sundews as often to be classed with them.

Itea is said to be the Greek word for willow and applied to our plants for their willow-like leaves. *Ribes*, the name of the currants and gooseberries, is an ancient Arabic name, and *Decumana* is from the Latin word for ten, in allusion to the flowers which are often ten-parted. *Chrysosplenium* means literally "golden spleen" and is reputed to hint of medicinal properties which the modern world fails to substantiate. *Astilbe* means "without sheen" and is conjectured to refer to the dull leaves. The name of the genus *Hydrangea* is composed of two Greek words meaning "water" and "a vessel." By most botanists it is said to refer to the seed vessels, but Wood observes that the plants are fond of water and this is probably the true explanation.

The genera *Tiarella* and *Mitella* are always mentally associated for both mean a head-covering of some kind. *Mitella* is a diminutive of *mitra*, a cap, in allusion to the pistil which some fancy to have the shape of a bishop's cap. *Tiarella* is a diminutive (of *tiara*, a coronet) which also alludes to the shape of the pistil.

Many of the Saxifragaceae are poorly supplied with common names; several, in fact, have none at all, while the names of others strongly suggest the bookman rather than the common people as their source of origin. This is true of *Astilbe biternata* which from its resemblance to the species of *Aruncus* is known as "false goat's-beard," and of *Itea Virginica* known in print, at least, as "Virginian willow" or "Virginia tea." It is very evident, however, that the last mentioned is simply an attempt of the unlettered to pronounce "Virginia Itea." The name of "chaste-shrub," occasionally used, is again a misapplication for the plant bears little resemblance to the true "chaste tree" (*Vitex agnus-castus*). More descriptive, at least, is "sweet spire," though this is rarely heard.

Chrysosplenium Americanum is usually called "golden saxifrage" from its saxifrage-like appearance but the "golden" part of the name seems to have been derived from the first part of the generic name and is as much of a mystery as is the "golden spleen" of the latter. "Water carpet" is fairly appropriate, for the plant grows in dense colonies where moisture is abundant.

The two most striking genera in the Saxifragaceae are *Hydrangea* and *Philadelphus*. Both of these contain species of sufficient beauty to secure for themselves a place in decorative plantings. *Hydrangea arborescens* grows wild in many shaded ravines and is naturally "wild hydrangea" in contrast to its cultivated relatives which have been christened "hills of snow." "High geranium"

is an amusing rendition of hydrangea and "seven barks" refers to the medicinal virtues of the plant which ought to be seven times as efficaceous as other common barks. The name of "bissum" given in Lyons "Plant Names" is unintelligible.

Hydrangea cinera is apparently even more powerful than its relative, for it is known as nine-bark. This name, however, it shares with *Physocarpus opulifolius* of the Rosaceae. It is also "wild hydrangea" and "silver leaf," the last name referring to the tomentose under surface of the leaves.

Philadelphus coronaria is best known as "mock orange" from its perfume which is regarded as very much like that of the true orange blossom. It is not clear how the plant became possessed of its well-known name of "syringa." This is the generic name of the lilac. It is derived from a Greek word which means a shepherd's pipe or pan-pipe and probably goes back to the nymph Syrinx, who was fabled to have been changed to a tuft of reeds. From these the god Pan is said to have made the musical instrument named for him. Any plant with a hollow stem therefore, might have been selected to bear the name and this was undoubtedly as good as any. Our plant is also called "false syringa" and "orange-flower tree," both of which are of obvious derivation.

A third genus to make contributions to the garden is *Ribes* which on occasion may be divided into two groups, containing the currants and gooseberries, respectively. Some of these are used in decorative planting and others are given a place in the garden because of their fruits. Common names are, therefore, plentiful. The "black garden currant" is *Ribes nigrum*. It is also called "blackberry" and "quinsy berry." A native plant with black berries is sometimes regarded as a variety of this and

sometimes as a species under the name of *R. floridum*. This of course, is another "quinsy berry" and also "flowering currant." The true flowering currant is that well-known inhabitant of old-fashioned gardens, *Ribes aureum*. Its strong and spicy fragrance has made it "clove currant" and "spice currant," while the bright yellow flowers account for the name of "golden currant." "Buffalo currant" and "Missouri currant" refer to its original place of growth. *Ribes Hudsonianum* is another "black currant" and "quinsy berry." The persistent application of quinsy-berry to our plants is said to be due to the belief that jelly made from the fruit is useful in the cure of quinsy.

The "common red currant" of our gardens is *Ribes vulgare*. It has long been used in wine-making and is naturally "wine-berry" while its color suggests "garnet-berry." "Raisin-tree," applied to this plant, has a curious history. In early English, "raisin" meant a cluster of grapes and later it came to mean a dried grape. The Latin *racemus*, from which our word raceme is derived, also means a cluster of grapes. Apparently the fruit-clusters of the currant induced the transfer of the name. It is not certain whether the names "risser" and "rizzer-berry" are derived from "raisin" or whether it comes from the old French *ressorer* meaning "to dry" but in any case these names are applied to the currant in Scotland. Our native "swamp red currant" is *Ribes triste* while *R. prostratum* is known as "skunk currant" and "fetid currant" from the disagreeable odor of the leaves.

The leader of the gooseberries, as far as common names go, is *Ribes grossularia* from Europe. A large number of its names, made on the other side of the Atlantic, have little meaning or interest for us, notably "honey-blobs," "goggles," and "gaskins." Our plant is often called "wine-berry" and "berry-tree." "Fea-berry," and "fay-berry" are

said to have been originally "fever-berry" and so, doubtless, other variations such as "fabes," "day-berry," "tea-berry," and "car-berry." Our own wild gooseberry is *R. cynosbati* which, for obvious reasons, is called "prickly wild gooseberry" and "pasture gooseberry." The names of "dog-berry" and "dog-bramble" are translations of the specific name, but how this plant happened to be called "dog-berry" in the first place, in either the common or the scientific parlance, nobody seems to know. *Ribes oxyacanthoides,* in spite of the prickly specific name, is the "smooth gooseberry" and the "hawthorn gooseberry," while *R. lacustre* is the "swamp gooseberry."

The word gooseberry is often assumed to have been originally gorse-berry in reference to another prickly shrub, but the etymologists insist that there is no evidence that this is so. Some consider the plant named for the goose, others derive it from "cross-berry." It is likely, however, that it comes from the same word as does the scientific term *Grossularia. Groser* is an ancient English name for the plant, and the French name for the currant is *groseille,* thus there seems to be a thread of relationship connecting even the common names. Our English name of "currant" originally meant the small dried grapes from the region about Corinth in Greece and our plants are said to have been so named because they resembled the better known fruits.

The genus *Saxifraga* has a number of species with names which often suggest the books, as instanced by "yellow marsh saxifrage" (*S. hirculus*), "alpine brook-saxifrage" (*S. rivularis*), "starry saxifrage" (*S. stellaris*), "lettuce saxifrage" (*S. micranthidifolia*) and "mountain saxifrage" or "purple saxifrage" (*S. oppositifolia*). *Saxifraga stellaris* is also "kidney-wort" in reference to medicinal properties. *Saxifraga Pennsylvanica* is in a

different class, being almost uniformly referred to as "swamp saxifrage." The "live-long saxifrage" is *S. aizoon*, a translation of the specific name which is more properly rendered "ever-living" or "ever-green." But whether the plant suggested the specific name or the specific name suggested the common name, history is silent. *Saxifraga aizoides* is known as "sengren saxifrage" which is equivalent to the names just discussed. The latter plant is also called "yellow mountain saxifrage."

The commonest of our saxifrages is that little inhabitant of rocky ledges which bears the name of *S. Virginica.* Its early blooming habit and rocky retreats account for the names of "early saxifrage," "rock saxifrage" and "spring saxifrage." The name of "Mayflower" misses being applicable by nearly a month, and "everlasting" is far from the truth. "Sweet Wilson" is of no significance.

Our common alum-root (*Heuchera Americana*) is evidently named from the tannin in the roots. From its liking for crevices in the rocks it is "split-rock" and "cliff-weed." This species and *H. villosa* are known as "American sanicles," being formerly valued in medicine. Usually plants named "sanicle" are referred to the umbelliferous genus *Sanicula* but both words are derived from a word which means to heal or to make whole. "Ground maple" applied to *H. villosa* refers to the shape of the leaves.

Mitella diphylla is often called "false sanicle" and "currant-leaf" from the resemblance of the leaves to Heuchera. The best-known common name, however, is "mitre-wort" because the flower-gatherer fancies a resemblance in the seed-pod to the mitre or cap of a bishop. The name is also embodied in the generic name. "Bishop's cap" has, of course, the same significance. "Two-leaved bishop's cap" refers to the two leaves that occur half way up the flower-stalk, and "fringe-cup" and "fairy cup" allude to the five

white petals which are cut into a fine fringe. *Mitella nuda* is also called "bishop's cap" and, lacking the leaves on the flower-stalk, is "naked-stalked mitrewort."

The "false mitrewort" (*tiarella cordifolia*) is a closely related species. Doubtless the small white flowers, and the fact that the plant grows in cool ravines, account for the names of "coolwort" or "white coolwort." If there is any significance in names, "foam-flower" should be applied to the true mitreworts, but the present species always bears it. "Gem-fruit" has no special application to this species whose fruits are scarcely noticeable.

Last of the Saxifragaceae is the "grass-of-Parnassus," a strange little plant, with small green-veined white flowers which one nearly always discovers by accident growing in swampy places. *Parnassia Caroliniana* is known as "Carolina grass-of-Parnassus," though the names of "white buttercup" and "white liverwort" are more descriptive. *Parnassia palustris* bears the name of "marsh grass-of-Parnassus" largely because of its specific name. It is found in both this country and Europe and is probably the very species that old Discorides had in mind when he named the genus more than eighteen centuries ago.

FROST-WEEDS

NOVEMBER is not a month to beguile the botanist into going afield. With the exception of the dandelion, the chickweed and a few other extra-hardy species the flowers have departed and their dead stalks serve only to remind him of a more pleasant season. Thus it happens that he misses the remarkable performances of the frost-weeds.

MUTATIONS.—When any kind of animal or plant produces offspring these young resemble their parents—but never exactly. There are always differences; lesser or greater. These differences are called variations. Most of these variations are mere fluctuations around a mean and are not necessarily repeated in the next generation. Some of them, which may be more marked, are undoubtedly due to varying environmental influences and also are not repeated in later generations unless these generations are reared under the same kind of environment. But sometimes these variations appear in the next and all the succeeding generations even though the environment surrounding the development of these succeeding generations is not the same as that which surrounded the first generation in which the variation appeared. Such variations are inherited. They breed true. Such heritable or fixed variations are called mutations, meaning that from one kind of plant or animal a new kind has been produced by a persisting change or little jump. This is the production of a new kind of plant. This is species-forming by mutation. It is the easiest kind of origin of species to observe. It has been observed by many naturalists. These naturalists have seen evolution actually happening. The most famous cases of this kind are the mutations of the evening primrose first carefully observed and described by the great Dutch botanist, De Vries, of the University of Amsterdam, and later observed and studied by German, English, and American botanists. These new kinds of evening primroses, arising by fixed jumps or mutations from a species called Lamarck's evening primrose, are visible evidences of the present-day evolution of plant kinds.—*Dr. Vernon Kellogg in Scientific Monthly.*

NOTE *and* COMMENT

TESTS OF RELATIONSHIP.—A Russian scientist is reported to have devised a test by which he can determine from a few drops of blood from the animal tested, whether it is male or female. This method has since been applied to plants and in the case of deciduous species, like willows and cottonwoods, similar results have been obtained. Other investigators have carried the idea still farther. If blood or plant juices will give reactions which indicate sex, it seems logical to assume that a test of plant or animal protoplasm should show their natural relationships. In the case of plants, the systematists have found many groups that cannot be satisfactorily located in a plant sequence because their relationships are obscure. The new test promises to give more definite data upon which to base conclusions. It is probably known to most plant students that the chemical reactions in lichens have been relied upon for a long time as a means of identifying the various forms.

GREEN-FRUITED NIGHTSHADE.—The fruits of *Solanum nigrum* have long been reputed to be poisonous, in spite of the fact that they are used for pies and sauces in the Middle West and that the plant enters into the parentage of Burbank's "wonderberry." It is possible that the reputation for poisonous properties borne by this species originated through a confusion of common names. There is another plant belonging to the same family which is also called black night-shade. This is *Atropa belladonna*, a truly deadly species. Nobody is likely to eat its berries and survive. But it is fairly certain that the berries of *Sola-*

num nigrum are harmless, at least when fully ripe and black. Mrs. Fannie M. Heath, however, has located a green-fruited form which appears to be poisonous and so may give some reason for considering the species as a whole harmful. Experiments are being made to test the matter and to discover whether the green-fruited form is able to perpetuate itself.

COLOR IN OUR CATALOGUES.—The garden days of another season are past. The color has gone and our patch, be it large or small, is carefully covered for its winter's rest. So far as digging in the dirt is concerned, we are through for this year. The annual we planted last spring has finished its brief life leaving, as its finished work, seed for perpetuation, and reposes upon the compost pile. The biennial has made its leaf growth, storing up food to bring forth flower and seed the coming season, and our good old standby the perennial, is asleep, but ready to keep marching on year after year, asking only our care in dividing and adding food in the way of fertilizer, as needed from time to time. When the holidays are past, the mail will bring the very welcome catalogues from various seed houses, these filled with promises for another and still other years; filled also with the Latin names used by our botanists in describing plants. What do these names mean to us? Too often the public turns aside from a specific name, refusing its use as affectation. It should not be so, for this name rightly understood is not dry and uninteresting but really explanatory and even musical. As an example take *Valeriana officinalis*. The word *officinalis* tells us (as *hortensis* or *vulgaris* would have done) that this heliotrope is the common garden variety, and brings to mind the fragrance of an old fashioned garden. I can see the spikes bearing deeply cut foliage and light pink flowers emitting a delightful fragrance during June and

July. If one would banish red from his garden he will learn to pass on, or turn the page when the eye rests upon a flower followed by the descriptive nomenclature, *splendens ruber, coccinea* or *cardinalis*. Any one of these shouts red as red can be. But in hunting blue flowers one may pause and ponder upon finding the words *violacea, azurea* or *coerulea*. Texture as well as color is explained by the scientific name, as *pubescens*, meaning downy, and *rugosa*, meaning rough. The catalogue with its botanical names may be made as interesting as a game to the amateur gardener. A very little understanding, together with a botany at hand, will soon make the Latin names as familiar as the plants along our garden paths in summer time.—*Sadie U. Moore.*

COMMON YARROW AN AMERICAN.—Among botanical writers there seems to be an almost universal tendency to list the common yarrow, *Achillea millefolium*, as a European introduction. Because it has a weedy tendency, and is well known in Europe, is no indication of its origin, and there seems to be abundant proof that it is indigenous to North America. Nuttall, in 1819, on his trip to Arkansas Territory, then an untouched wilderness, declared it to be there "as plentiful as in Europe." On the Pacific Coast, in 1825, David Douglas records that the plant was "abundant on the banks of all rivers." At a somewhat later period, too, Captain Fremont has this to say: "*Achillea millefolium*, was among the characteristic plants of the river bottoms today. This was one of the common plants during the whole of our journey, occurring in almost every variety of situation. I noticed it in the lowlands of the rivers, near the coast of the Pacific, and near to the snow among the mountains of the Sierra Nevada." As this was in 1843-44, and much of the territory covered by Fremont was entirely new ground, there can be no

question of European influence. Added to the above, some of the Indian uses of the plant prohibit any thought of a recent introduction.—*Leslie L. Haskin, Albany, Oregon.*

BIDENS EXPANSA.—October, and the bur marigold, or water daisy, comes to its own along our shallow and slow moving streams. It grows with its feet in the water being found only in wet sand and rarely more than five or six feet from the border of the stream. The hollow, reddish stems are from two to eight feet high, only reaching the extreme when there is something to lean against, as for instance a small clump of low willows. In the Los Angeles River bed it forms a border of gold all along the stream, making a glorious spectacle in early October. While our local plant is not the real water daisy or bur marigold, this is the only "English" name that has been applied to it, so far as I know. Three species of this genus are found locally: *B. pilosa,* "Spanish needles," *B. frondosa,* the latter rare here, both of which have inconspicuous heads of flowers, and *B. expansa* Greene, which is very showy. Indeed the flowers are almost as large as *Helianthus annuus.* My own choice of a "common name" would be water sunflower. But I realize that the only way a name can become common is by being in common use, although a friend of mine once, in speaking of a flower, said, "it has no common name so I will give it one," as much as to say his giving of a name would make it a common one. But the best of it all is that the plant is here and flaunts its golden glory over our October landscape, provided there is enough water.—*Geo. L. Moxley, Los Angeles.*

LIFE-CYCLE IN PLANTS.—For convenience in distinguishing them, we commonly divide plants into the annuals, biennials, and perennials, but nature knows no such hard and fast lines. In length of life her species range from

a cycle of a few weeks to that of many centuries with all sorts of gradations between. The annuals, for instance, cannot be defined as those which live a single year, or even for one growing season. The little whitlow-grass (*Draba verna*) and *Androsace occidentalis* run through their terms of life in less than two months while other species have all they can do to complete their life-cycle before frost cuts them down. Moreover, there are many annuals that may be made to live for more than a year by removing their flower-buds as fast as they are formed. This, by the way, gives a hint as to why many plants die; the burden of reproduction is too great for their vitality. Biennial plants are simply those which are unable to complete their span of life, at any great distance from the equator, within a single growing season. In warmer regions, biennials are rare because they have time to run through all phases of their existence in one year. The perennials are in some respects only longer-lived annuals. First of all there are plants like the yucca and the talipot palm which fruit only once and then die, but which often require many years for the process. Then there are the plants more commonly called perennials, which usually bloom more than once and often require a number of years to reach blooming size. The weaker specimens often succumb after a single season of bloom, in this respect behaving like biennials. In some cases the line dividing the two groups is indeed, indistinct. If one removes the flowers from such species as fast as they fade and thus prevent the formation of seeds, they may bloom abundantly another season, but a severe winter or protracted drowth usually gets them. At the other extreme are such hardy species as the peony, gas-plant, tawny day-lily, and graveyard weed. The last mentioned often exists long after the hands that planted it have turned to dust. The trees and

shrubs seem to be, at first glance, more distinct than the herbaceous species but even among them there are half-shrubby, half-herbaceous species and others that seem undecided whether to be shrubs or trees.

WALNUT BLOOMS TWICE.—It is not unusual to find spring-flowering plants blooming again in autumn, especially if the summer has been hot and dry. Anything which seems to threaten the life of the plant may induce a new crop of flowers and fruits to appear. The woody plants, however, are less impressionable than the herbs and more rarely exhibit the phenomena. The hawthorn, apple, wild crab, pear, and other members of the rose family perhaps most frequently show it. One of the most interesting cases of such happenings was noticed last summer in the editor's garden where a black walnut, after several weeks of very hot dry weather, put forth a profusion of new catkins.

CLEISTOGAMY IN VIOLETS.—There is probably no family of plants in the world that so consistently bears cleistogamous flowers as the violets. In other plants the production of such flowers is usually incidental and often due to external influences but the violets not only produce them regularly but depend chiefly upon them for the production of seeds. The bright-colored flowers seem designed only for display. An insight into the way cleistogamous flowers have come about may be gained from the behavior of *Viola Canadensis*. This species may produce an occasional showy flower throughout the summer, but usually at the height of the warmer season the petals drop off and the blossoms become in fact aerial cleistogamous flowers. In *V. conspersa* (*V. Muhlenbergii*), as the season wanes, the showy spring flowers disappear and cleistogamous flowers appear in the same axils that produced the showy ones. In the section of the genus to which the

common blue violet belongs, cleistogamous flowers, borne underground, are the rule and their peculiarities form points of diagnostic value. Violets spread rapidly by means of seeds shot out of the seed capsule after the manner of the witch-hazel. The seed capsules, borne from midsummer to autumn, are not conspicuous and attract little attention, but if placed in a paper sack when ripe, they soon begin a bombardment that can be heard across a large room and this does not cease until the last seed has been dispersed.

ELLSWORTH BETHEL.—With regret we note the passing of Ellsworth Bethel, who died on September 8, 1925. At the time of his death he was Curator of the Department of Natural History in the Colorado State Museum and Pathologist of the U. S. Bureau of Plant Industry. Professor Bethel had been on the Patron's list of this magazine for nearly twenty years.

THE BOTANIST GOES ABROAD.—The American Botanist goes to many foreign countries, but the first bound set to cross the Atlantic was recently sent to Mr. Thomas Hay, Superintendent of Parks, London, England. This set is No. 78. It is bound exactly like the Editorial Set, each two volumes bound as one, and so far as we know is the first complete set to be owned in Europe. It was presented to Mr. Hay by H. W. O'Melveny, Esq., of Los Angeles, Calif. There are now only eleven full sets remaining. To own one of them will soon be a mark of distinction.

HAY FEVER PLANTS.—Those who have been inclined to blame goldenrod and the lowly ragweed for causing hay-fever may be informed that they are only partly right. According to a very interesting booklet put out by the Arlington Chemical Company of Yonkers, N. Y., "any plant which sheds pollen can cause hay-fever." The chief offenders, however, are found in only five plant families

namely, the grass, goosefoot, amaranth, ragweed, and thistle families. Among plants that we seldom think of as likely to cause hay-fever are corn, dahlia, sunflower, cocklebur, sage-brush and dandelion as well as such anemophilous types as birch, oak, willow, maple, and elm. Not only may any of these or numerous others cause the affliction, but some unfortunate individuals are susceptible to several kinds. The treatment of hay-fever by means of pollen extracts has reached such proportions that the Arlco Company have hundreds of different kinds ready for use. In preparing these, competent collectors gather the pollen from properly identified plants over a wide range of territory. One would be inclined to think that ultimately it will be necessary to grow the principal kinds of pollen as any other crop is grown, or at least to contract with growers for adequate supplies. It is interesting to note in passing that the company also prepares a great number of protein extracts from such substances as feathers, fur, horse-dandruff and various foods, to be used in the relief of asthma. It is now well known that several forms of this ailment are due to foods which are ordinarily harmless. Even white bread may cause asthma in some persons. The pamphlet, which may be had free, contains a number of illustrations of plants and their pollen grains.

EDITORIAL

There is no doubt that our choicer wildflowers are steadily becoming rarer. Their disappearance may be attributed, in part, to wholesale flower gathering by inconsiderate collectors, but most of it is due to the bringing of wild lands under cultivation. As our population increases, larger and larger areas must be brought under the plow to supply needed food. The growth of cities, the levelling of the forests, the draining of swamps and the irrigation of dry lands is destroying the wildflowers a thousand times faster than all the plant collectors together. The need for conserving this rapidly vanishing feature of nature is conceded by everybody, but there is no general agreement as to how this is to be brought about. In some parts of the country there is a strong sentiment against any picking of flowers, but when the farmer or his cows are destroying them by millions it is hard to convince the flower-lover that he should be deprived of his bouquet. Those who delight in the wild flora are often advised to grow the plants in their gardens but the stock for such purposes invariably comes from the wild and the digging of plants is even more frowned upon than gathering their blossoms. It does not, however, appear to be a very serious matter to beat the cow, the plowshare or the lumberman to a desirable specimen. If lands are to be reclaimed for agriculture, there is no reason why the wild inhabitants should not be removed and sold to people who may wish to grow them; indeed, like the Christmas trees, they may even be proven to be the most paying crop that can be grown on certain areas. It is likely, however, if the growing demand continues, that

ultimately we shall have to produce some of our plants in the nursery, just as we now grow exotics. The question is, can such plants be grown and sold under conditions that will yield a profit to the grower? Large numbers of desirable plants multiply rapidly by seeds, or by vegetative means, or by both, and their preservation presents no difficulties. It is quite otherwise with such choice things as orchids, gentians, bloodroot, arbutus and the like. These multiply but slowly by vegetative means and still more slowly, if at all, by seeds. Though they often produce seeds in abundance, very few of them come up. What causes this, nobody seems to know at present, but the Wildflower Preservation Society has set itself to find out and in due time we shall probably have an answer. But there are many other things to be considered before the data are all in. One needs to know, for instance, whether the seeds of a given species will grow best if sown in fall or spring; what effect, if any, different kinds of soil have on the seedlings; whether the plants are best grown in sunlight or shade; how long it takes each species to come to maturity; what diseases and insect pests threaten the life of the young seedlings; and whether the plants are best grown in one place or transplanted. It might be desirable to take up each species by itself and indicate its peculiarities. We could soon make a list of those easily propagated and then concentrate upon the difficult ones. In such an undertaking, any plant student can help. Those with sufficient leisure might find the propagation of some plant hard to grow, a very attractive problem.

BOOKS AND WRITERS

Somebody has been advertising for "two first-class scientists and a botanist." * * * This seems to be about the usual value the public sets on a plant student. * * * The owner of a music store in the city where this is printed, recently decorated his store with poison ivy for a fall display. * * * It was quite successful in some ways. * * * Perhaps he is the advertiser mentioned above. * * * The botanists seem to be caught in a bear market. * * * We observe that the only woman governor in the South has eliminated all reference to evolution from the school-books used in her State. * * * People who will stand that sort of thing probably need a governess! * * * But they can subscribe for this magazine and keep informed regarding the monkey-business. * * * The Wildflower Preservation Society is issuing a series of circulars designed to acquaint the public with the need of conserving the wild plants. * * * Among them are lists of species that should be protected and of others that may be picked. * * * The State of Illinois and several adjacent States have made it possible to establish county forest preserves. * * * This ought to help the flower-protection movement. * * * The Campbell Printing Company of Des Moines, Iowa, are offering, free, a little 16-page planting and spraying manual entitled "Successful Planting." * * * Department of Agriculture Bulletin No. 1331 gives directions for growing and marketing the Madonna lily. * * * This species is said to grow best on our north-west coast, but many other regions seem as well adapted to it. * * * Since we annually import more than six hundred thousand bulbs it is likely that one with the proper soil might find their production profitable. * * * The largest bulbs retail for about sixty cents each; this ought to be better than growing onions. * * * Ivar Tidestrom has just issued a "Flora of Utah and Nevada" as Volume 25

of "Contributions from the United States National Herbarium." * * * It is essentially a list of species with their distribution and ranges. * * * There are good keys to the species, but no other descriptions given. * * * It will be useful to collectors and ecologists though here and there a species is missing. * * * Mrs. Mary F. Baker, Winter Park, Florida, is about to bring out an introduction to the wildflowers of the Florida peninsula. * * * It is to be hoped that the book will appear before the entire State is turned into building lots. * * * The Williams and Wilkins Company of Baltimore, printers of nearly a hundred minor scientific publications, announces a new quarterly *Review of Biology* to begin in January. * * * The board of editors contains the names of all the leading biologists, but it remains to be seen whether they can concoct a periodical of popular interest. * * * The advanced scientist, like the famous Doctor Johnson of dictionary fame, is inclined to "make his little fishes talk like whales!" * * * The indefatiguable Germans are putting out a number of contributions to botany. * * * Another installment of the "Handbuch der Biologischen Arbeitsmethoden" has been issued by Urban and Schwarzenberg, of Berlin. * * * This is devoted to "Methoden zur Bestimmung der Zusammensetung der Nahrungsmittel der Pflanzen" by Hugo Neubauer. * * * Sounds interesting! * * * Oswald Weigel, Leipzig, sends us a pamphlet by Ernst Almquist, entitled, "Biologische Forschungen uber die Bacterien." * * * In addition to the text there are 42 photomicrographs of different forms of bacteria. * * * From the press of Gebruder Borntrager in Berlin comes Bands 2 and 4 of "Samlung Borntrager." * * * In one, Erwin Baur writes of "Grundlagen der Pflanzenzuchtung" and in the other Otto Heuser treats of "Grundlagen der Pflanzenernahrung." * * * The price of each in boards is 90 cents. * * * We hear that W. B. McDougall

has issued a book on mushrooms and that John Wiley & Sons have brought out a book by A. S. Hitchcock on "Descriptive Systematic Botany." * ** The National Nurseryman reports that a Virginia company has 35,000,000 narcissus bulbs and a South Carolina establishment has 11,000 acres devoted to the paper white variety. * * * Now you see why certain interests would stop the importation of bulbs. * * * The first Supplement to "American Plant Names" will be ready in January. * * * It contains more than three hundred additional names alphabetically arranged under both scientific and common names. * * * Those who own the book can get the Supplement for twenty-five cents; the price to others is fifty cents. * * * The lists cover more than fifty pages.

* * *

In the sixth, and what may prove to be the last, number of "Gentes Herbarum," Dr. L. H. Bailey attempts to "unscrew the inscrutable" by sorting out the blackberries of Eastern America. This has been tried many times before but each investigator gets a different answer to the puzzle. Dr. Bailey appears to be as well qualified to render a judgment as anybody for his own herbarium contains more than 5,000 examples of these plants and he has also had access to most of the other material in existence, but even then he is not settled in his convictions. A single form, now called *Rubus roribaccus* has been called by him a variety of at least three different species. The fact is, the blackberries are either most variable as to form and extensive as to hybrids or they are unusually numerous as to species. Dr. Bailey's account does much to clarify the subject, but it is evident that still more work needs to be done on this perplexing group. "Gentes Herbarum" was begun in 1920 as a medium for the publication of studies by Dr. Bailey and others. The fascicle at hand completes a volume of

some three hundred pages and many illustrations. The author says that a number of other and similar studies are ready, but that means for publication, are not available, and further issues are not to be expected. Such a publication, however, should not be allowed to languish. A nation that spends as much as we do on newspapers and cheap novels, ought to be able to squeeze out enough funds to keep a few worth-while scientific journals going.

* * * *

Mrs. Francis King's latest volume is entitled "Chronicles of the Garden." It consists largely of articles previously published in various periodicals devoted to landscape gardening, beginning with a chapter on Round About the Spring Garden and ending with two chapters on Gardening in Winter and Garden Happiness. Between these extremes are a dozen chapters devoted to daffodils, gladioluses, flowering trees and shrubs and the gardens they inhabit. The book is not intended as a garden manual; it is for those more sophisticated people with gardens of their own who are interested in the garden experiences of others. The author gives her impressions, often superficial, it must be confessed, on all these matters. An unusual number of new varieties, named for people of no consequence, are mentioned, but since many of these are certain to be superseded by others in a year or so, the gardener will do well to investigate their merits before substituting them for satisfactory forms already in cultivation. As an indication of the state of gardening of the present, the observations are invaluable, as are the author's suggestions to garden clubs. In an appendix, planting suggestions are given for different styles of houses which are likely to interest all who have new plantings to make. The book contains 276 pages and is embellished with upwards of twenty-five unusually good full-page plates. It is published by Charles Scribner's Sons, New York, and costs $3.

"The Book of Plants," by Bertha Morris Parker and Dr. H. C. Cowles of the University of Chicago, is intended by the authors to "serve as informational silent-reading material for children in the sixth, seventh and eighth grades." All too frequently when university people write for children the language used is either over their heads or so babyish as to repel even young readers, but in the present book the authors have avoided both pitfalls. The text is an unusually clear presentation of such interesting features of botany as century plants, bacteria, yeasts, insectivorous plants, desert plants, plant travels and plant families. Even rather technical matters like photosynthesis, plant breeding, symbiosis, and plant migrations, are rendered into short words of Anglo-Saxon origin such as young readers understand. The text naturally has an ecological slant. There are 28 chapters in all and 100 good illustrations, the whole covering more than 250 pages. This is the first of a proposed series. If the others are as well done they will do much to make the subject of botany attractive to beginners. Older readers may find the book profitable reading also. It is published by Houghton, Mifflin & Co., Boston, and costs 88 cents.

In ordinary text-books the making of the world's food by plants is usually dismissed with a dozen pages or so, devoted to it, but if one goes into the subject in earnest he discovers that an entire volume is none too large to contain all pertinent information. This, at least, is the position of Dr. Walter Stokes of the University College of Reading, England, who has made a book of more than 250 pages about it. The exact title is "Photosynthesis; the Assimilation of Carbon by Green Plants." The author has not merely tried to explain photosynthesis; he has aimed to bring our knowledge of the subject down to the present. From the fact that more than 870 references to the work

of others is given, it is evident that the author is well prepared for his task. Among the phases of photosynthesis discussed are the pigments concerned in carbon-assimilation, the measurement of photosynthesis, products of the process, the influence of external conditions, the mechanism of photosynthesis, and the utilization of the energy involved. Throughout the book, especial care has been taken to give to each worker, full credit for his contributions to the knowledge of the subject. The author suggests that although the book is designed for research students, it may appeal to the general public as well, but it may be doubted whether the lay reader will find it understandable without some preparation. The book is undoubtedly authoritative but the language of the subject is necessarily somewhat technical. The author discusses the views of others with great fairness and is not disposed to obtrude his own opinions. To all who are interested in carbon-assimilation in plants, the book should prove a most valuable source of ideas and information. It is published by Longmans, Green & Co., New York. The price is $5.50.

Although much has been written about the Painted Desert of Northern Arizona, very little has been printed about its flora, perhaps because this latter approaches the condition of the snakes in Ireland. The region is not one in which the collector may wander at will. He must keep to the beaten path and look well to conserving the aqua impura in his canteen. In the days of horse transportation a journey across the hundred miles of sandy waste that separates Tuba oasis from Flagstaff was an adventure of some consequence, but the advent of the automobile has made the region accessible to even the tourist. The flora, therefore, is likely soon to be better known. Though the vegetation is scanty, what few plants there are have considerable interest for the student. One is never quite cer-

tain how any vegetation can exist under such arid conditions, yet exist they do, here and there, springing from the crevices of dry rocks, or clustering about some dusty water-course or alkali seep. In winter other extremes have to be endured for the temperature occasionally goes down to twenty degrees below zero and snow may accumulate to the depth of three feet or more. With the exception of one other collector, the only person who has paid much attention to the flora since the early explorers is Dr. Herbert C. Hanson who studied the plants in the summers of 1922 and 1923. His report is published in "University Studies" for 1924, issued by the University of Nebraska. After an ecological survey of the desert and adjacent uplands, Dr. Hanson finds that the vegetation falls into six climax formations, varying from the alpine meadows above elevations of 11,500 feet, to the sage-brush plains below 5,200 feet. Lists of representative species of each formation are given and these should be of great help to later students. The reviewer, however, would scarecely regard the lowest portions of the area as typical sage-brush formation. The dominant plants in the area south and east of the Little Colorado river, for instance, have few if any examples of sage-brush. The dominant plants are species of *Atriplex*, *Isocoma*, *Chrysothamnus*, and the like. The region, however, is one of great fascination for the botanist and the reviewer is of the opinion that an annual pilgrimage to it would be none too often. All who are attracted to its ecological problems, will find Dr. Hanson's account decidedly helpful.

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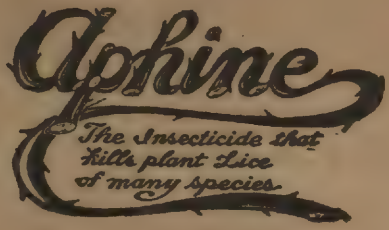

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AMERICAN LOTUS.—*Nelumbo lutea*

THE AMERICAN BOTANIST

VOL. XXXII. APRIL, 1926. No. 2

Loveliest of trees, the cherry now
Is hung with bloom along the bough,
And stands about the woodland ride
Wearing white for Eastertide.
And since to look at things in bloom
Fifty springs are little room,
About the woodlands I will go
To see the cherry hung with snow.

A. E. Housman.

THE LOTUS IN NORTHERN OHIO

By CARL KREBS

THE American lotus (*Nelumbo lutea*) occurs in many of the rivers and creeks which enter Lake Erie from the watershed of northern Ohio. They have established themselves in a zone extending from half a mile to two miles from the mouths of these watercourses. Beginning at Ten-mile Creek at Toledo, we find them again at Sandusky Bay, where Asa Gray first discovered them; then comes Huron River (Mud Creek), Old Woman's Creek near Ceylon Junction, and from there a jump to the Chagrin River, twenty miles east of Cleveland. A slow running current in a shallow bed or where navigation requires the dredging of the sand-bars to keep open water is an ideal location for these beautiful water lilies.

In the first week of August the large showy flowers, probably the largest of our flora, will unfold their petals and sway to and fro on their wand-like peduncles above the platter-like orbicular leaves. The associate formation is the vegetation of a swamp. Cat-tails, reeds, pickerel-

weeds, zizania, and others form the outer zone and sometimes spreads entirely across the creekbed so that a small boat can only pass through by being poled. It seems strange, but the aristocratic lotus plant appears not to tolerate the plebeian spatterdock, for only once in my visits did I find a lonesome yellow pondlily encroaching upon the former's domain.

THE LOTUS FLOWER

A shower will cause a rather curious phenomenon in these plants. When the rain has filled the depressed center of the leaves, which are raised on stalks above the water's surface, they execute a graceful bow, shed the over-balancing liquid and tremblingly return to the upright position.

A leaf bowing here, another there, one might fancy they were dancing a stately minuet.

Late in the fall I accompanied a friend who wished to collect the seed pods of the lotus for decorations. Exploring several of the known stations I rather rejoiced in not finding a single pod, for my sympathies were not with the object of this expedition. But what had become of the great numbers we saw in the earlier part of the season? Many stems were broken about two or three inches above the surface of the water with the tops turned down and emersed. Lifting them up we found the pods still attached to the stems, though some were partially disintegrated, and some had dropped off entirely. This evidently was the method employed by the lotus to disseminate its seed.

The fruiting capsule is built on the plan of the pepper box, but the seeds cannot be shaken out like those of Stramonium and others. Even when turned upside down, it is difficult to shake a nut out through the openings at the top. This plant proceeds otherwise, enlisting the help of its natural surroundings, the water. A corky layer of cell-tissue, like that in the petioles of the deciduous leaves when they drop from the trees in the autumn, is formed a few inches above the water. A slight wind, or even its own weight will cause the stem to break and the pod to topple over into the water. Here the tissues are gradually disintegrated, eventually setting free the seeds which drop into the oozy bottom of the creek and are ready to germinate the next season.

THE DRAGON'S-TONGUE

By Delphia Phillips

DRAGON'S-TONGUE is perhaps not its name, but it ought to be! There is something very sinister about the flower yet something extremely beautiful as well. The way in which the great stalk shoots up from the bulb seems uncanny. In the specimen here pictured the bulb was over four inches across when the flower stalk began to form. The flower developed entirely from its own substance, since the bulb had nothing but air on which to thrive.

In October the bulb was mailed to Mrs. C. C. Hood of Balboa Island, California. She placed it in the glass dish as shown, and weighted, or rather, propped it up securely with small stones. About the first of March the leafless flower-stalk pushed up from the center of the bulb and after the bud appeared it was fully two weeks before the flower was mature and widely opened. It was much the shape of a calla-lily, but of a rich, dark, maroon color with the very long "tongue" of the same color.

The throat of the blossom was a queer mottled green and maroon, giving it a somewhat snaky appearance. The inside of the flower was a solid maroon color and the base of the tongue was set with tiny spicules in the most regular and beautiful formation for about an inch above the throat of the flower. As soon as it was fairly open, the scent it gave off was so offensive that it had to be removed to an unused room. The smell was exactly like that of decaying meat. The blossom measured eighteen inches from base to tip of the tongue and was seven inches across. The entire plant was thirty-one inches high, measuring again to the tip of the tongue.

The plant remained in bloom for weeks but gradually withered. It was then set in the ground in the open to ripen and to see if it would grow new bulbs, or whether the old bulb would again bloom. It soon developed leaves of a sprangly nature on stalks which grew up about three feet from the ground. These in turn died down about the first of November. When taken up it had developed two tuberous appendages from the tip which will probably develop new plants. The old bulb appeared smaller than when set out, but shows the new flower stalk ready to shoot up from the center as before. It is not known how long it will take the tubers to be large enough to flower. They looked somewhat like dahlia bulbs, being elongated instead of round and about as thick as one's finger.

[The dragon's-tongue is usually known as *Amorphophallus rivieri* but its true name is now regarded as *Hydrosme rivieri*. It has long been known to botanists and is a native of Cochin-China. When growing in its native habitat, the flower-stalk or scape is three or four feet long and the central tongue or spadix is two feet or more long. The large bract that surrounds the spadix is morphologically a leaf but is often taken for a flower. The true flowers

are clustered at the base of the spadix or tongue as in the familiar Jack-in-the-pulpit and the calla-lily, both of which are this plant's near relatives.—ED.]

THE MEANING OF PLANT NAMES—XXVI

CARYOPHYLLACEAE

By WILLARD N. CLUTE

AN account of the plant names in the Caryophyllaceae seems to belong more to the Old World than to America, for, of the seventy-one species recorded in our flora, nearly half,—thirty-four to be exact—are natives of foreign lands. There are thirteen genera represented and of these, seven consist entirely of Old World forms and another has only one native American in it.

The Caryophyllaceae are remarkable in another way, for they divide naturally into two groups which might be designated as the weeds and the flowers, respectively. All, of course, bear flowers, but the weedy species are of so little beauty that little attention is paid to them. Our native species would probably be classed with the weeds, for they are rather inconspicuous plants, but there are a few that are quite as brilliant as any that have come to us from abroad.

The showy foreign species have been imported for the flower garden and their occurrence in wild or waste lands is due to their successful escape from cultivation. The weeds have likewise been imported but not by intention. They have attended to this matter for themselves, slipping in with grass seed, feed for animals, or perhaps in the packing about fragile articles, or in ballast.

Typical of the weedy genera is *Spergula* whose name is derived from the Latin *spergo,* meaning to scatter, and alludes to the method, or perhaps the facility, with which

it spreads its dominion. In any event the plants that belong to it are worthily named. The generic name of the sand spurrey, *Spergularia* is naturally from *Spergula.* The ancient name for the spurrey was *Sagina,* a term still retained for some species of the family. It means "fattening," but such a term is doubtfully applied to any member of the group.

Another weedy group, named for its sand-loving members is *Arenaria* from the Latin *arena* meaning sand. Easily confused with the species of this genus are the members of *Stellaria.* These should be the true star-flowers, if names count for anything, for *Stellaria* is from the Latin *stella,* a star. Not unlike these in general appearance are the species of *Holosteum* and *Cerastium.* The first-named is from the Greek and means "all bone," but the plants are anything but hard. Britton suggests that the name is an antiphrase because the plants are so tender. Gray, however, says that the name is an ancient one used by Dioscorides for an unknown plant. All agree that *Cerastium* alludes to the seed-capsule which in some species is like an old-fashioned powder-horn. The word is from the Greek and means horny.

A connecting link between the weedy and more showy species is the genus *Saponaria* which contains the famous "Bouncing Bet," once a prized denizen of the gardens but now universally turned out to shift for itself. The name is from the Latin *sapo* meaning soap, because some species, especially the one just mentioned, abounds in a natural soap and was formerly sold for the purpose of laundering fine fabrics. Nearly as showy but still regarded as a weed is the genus *Agrostemma* whose name from the Greek is literally "crown of the fields." *Gypsophlia* the generic name of the familiar "baby's-breath" means "gypsum-loving" from a fancied preference of the plants in this

genus for gypsum soils. *Tunica,* used for a commonly cultivated species, means "cloak" and is probably in allusion to the close fitting calyx.

Our showy garden members of the Caryophyllaceae are found in the three genera *Silene, Lychnis,* and *Dianthus.* The species are usually called pinks and campions. The species of *Silene* often excrete a sticky substance from the stem in which small insects become entangled and hence are called "catch-flies." The generic name is by some regarded as being derived from the Greek for saliva and by others as referring to Silenus, a drunken divinity covered with slaver.

Lychnis is from the Greek and means a lamp. It is well applied to this genus in which there are a number of showy red and flame-colored flowers. Wood, however, says that some of the species were used for lamp-wicks in ancient times. Last of our genera is *Dianthus,* whose species are so fragrant and showy as to have been thought worthy of being dedicated to the great Jove himself. The name is from the Greek Dios another spelling of Zeus, and *anthos* meaning flower.

There are more than 1200 species of the Caryophyllaceae widely distributed over the earth but mostly in temperate regions. A large number are showy plants. The family is named from *Caryophyllus,* the name of the clove tree, which, however, is not a member of the group. The name seems to have been given from the strong spicy odor of the flowers of some species. The group is often called the pinkworts or pinks, but it will probably be a surprise to many to learn that the latter name is not given from the color of the flowers, but refers to the pinked and jagged edges of the petals. Pinking has largely gone out of fashion as a method of decoration but the plants still retain it. The name of the color, pink, seems to refer to the flowers thus

pinked! The word campion frequently applied to many species probably refers to their place of growth, from the Latin *campus* meaning a field. Stitch-wort is a name applied to several inconspicuous species. The original stitch-wort seems to have been a species of *Holosteum* with a reputation for curing a stitch or sudden pain in the side, though according to some authors, it was an antidote for the stitches or stings of venomous reptiles. It may be added, however, that if the plants ever had such powers, they have lost them long ago.

There are more than 250 common names recorded for the seventy-one species in our flora. These will make a chapter by themselves and may well be left to another time.

THE WEED FLORA OF POCATELLO, IDAHO

By Mrs. M. E. Soth

POCATELLO and vicinity is one of the most interesting stations in the United States for the study of weeds. Introduced species are unusually numerous and varied. In addition to most of the plants that are common weeds elsewhere we find a number that were native in other parts of the West, some that came into the country by way of the Pacific Coast, and various undesirable immigrants that have been brought here from distant lands. Weeds from the East meet those from the West, species from continental Europe mingle with those from South Africa, and forms from isolated, interior Asia find an opportunity here to compete with dominant new world plants. All sorts of variations in soils and moisture occur here, propagation is for the most part undisturbed, and there are unlimited facilities for seed dispersal. Moreover, our native plants that have a tendency to become weeds have every opportunity to show how well they can contend with the invaders.

The older pioneers can remember yet the time, about 1890, when the Russian Thistle (*Salsola pestifer*) and "pigweed" (*Atriplex rosea*) began to be noticeable. The present generation has watched with amazement the rapid spread of ring-leaved peppergrass (*Lepidium perfoliatum*) and African mustard (*Cheirinia repanda*).

Not many of the dominant weeds of eastern localities succeed in this region. While one sees every season a few individuals of *Malva rotundifolia, Portulaca oleracea, Stellaria media* and the like they are strictly confined to improved soils and seldom survive more than a season or two in any one place. Dog fennel and Jimson weed are unknown here. The amaranths, various members of the Goosefoot family, wild lettuce and the sow-thistles will intrude into cultivated lands if they are tolerated at all but reasonable diligence in cultivation controls them. Other more western plants like *Iva axillaris, Xanthium commune* and *Grindelia perennis* infest neglected areas but no one needs to have them on his premises for they are not aggressive about thrusting themselves into tilled lands.

Differing from such weeds as these, however, we have had within the memory of the present inhabitants, at least three successive waves of weed migration in which some one species was so dominant as to outnumber all the other weeds combined. The early settlers found that they could not succeed in growing here the ordinary crops of the Middle West. Seeds of the plants that made successful crops in parts of the Old World that have a similar soil and climate were imported for trial in this new western land and with them came the seeds of some of the weeds that grew with them in their home lands across the sea. Most of these weeds were not regarded as dangerous in their original home. They were small and inconspicuous and probably never occurred in numbers sufficient to call for much attention.

Bromus tectorum, locally called "June grass" because it ripens in June, immediately left the wheat fields where it had been thus introduced and, finding the soil exactly to its liking, ran rampant over the native bunch grass areas. Nothing could stop its spread nor check its growth until within the last five years *Hordeum jubatum*, a native western grass, is beginning to dominate the areas once occupied exclusively by the June grass. Of the two, the squirreltail is by far the worst pest by reason of its perennial root system. It is just as worthless and dangerous to stock, far more aggressive and enduring, but marvelously beautiful when in bloom.

While this war among the grasses was taking place the Russian thistle and *Atriplex rosea*, called "pigweed" by the ranchers, began to be noticed. The first few individuals resembled those of their native land but, finding in this region a soil and a climate so much more favorable to their growth, they soon waxed lusty and strong. In a very few seasons both these plants took on such a new, thrifty appearance that the botanists who examined them thought at first that they were new, western species. Their true relationship in character were soon discovered, but too late! Nothing could then have prevented their spreading and possessing the whole western country. They dominated the landscape until the tumbling mustard came. Creeping eastward from the coast along the line of the Northern Pacific railway, it began to be conspicuous about 1905 and by association of ideas was dubbed "Jim Hill mustard" by the ranchers. Once established east of the mountains it swept southward through the intermountain country like a mounting flame. Windblown plants scattered millions of seeds which sprouted in the fall and formed plants which lived over winter. Ranchers cut and burned it, plowed and cursed it and gave up, moved off and left it. The

Russian thistles and pigweeds, overcome by sheer force of numbers, were forced to give way before it or to at least allow it space to grow beside them.

But fencing and cultivation are gradually controlling all these weeds and today they are not nearly so dominant. On the land which was once cleared and broken and then abandoned, torch weed (*Gutierrhezia*), a native plant, is coming back and re-establishing itself. Sunflowers are seeding themselves and occupying the dry bench lands more and more widely and densely. *Iva xanthifolia* has developed in the last few years until it now forms great, tall copses in all the neglected corners about the irrigation systems. Ringleaved peppergrass, introduced with sugar-beet seed, and African mustard, which came into the region as a ballast plant, cover the vacant lots in many of the towns of the region. Brass buttons, a South African plant from the Pacific Coast, and Jungle rice (*Echinochloa Crus-galli*) are spreading in the ditches with two native plants, wire grass (*Eleocharis palustris*) and thick rush (*Juncus Torreyi*) crowding them out where they are undisturbed. *Atriplex laciniata,* a weed from southern Europe, and *Hymenophysa pubescens,* from central Asia, are unique in that they have been found only in Pocatello. The former has its center of distribution in the city, apparently associated with the foreign colony, but is spreading rapidly everywhere about town and in the vicinity. The latter, probably introduced with alfalfa seed, is a weed of hay fields and pastures just now beginning to spread from the original colony. Fanweed and perennial sow-thistle which have ruined so many hay fields in Montana and North Dakota are just now coming into this valley. Ranchers are already asking for help to control burdock and last season I found well established colonies of Knapweed and *Brassica adpressa,* another undesirable immigrant of the mustard family. Possibly not more than one or two of

these newcomers will find conditions favorable enough to ever spread very far or to gain much headway. A few of them are sure to spread rapidly but people will not heed warnings until the overwhelming multitudes are beyond control. Two seasons ago I collected a few stunted little specimens of Dame's violet, (*Hesperis matronalis*). Last summer it was everywhere, a purple cloud along arid highways, in neglected gardens and creeping into lawns and pastures.

But a new enemy, the purple lettuce (*Lactuca pulchella*) has appeared. Borne on the wings of our constant winds and on the ever moving waters of our irrigation systems it has thoroughly established itself in two seasons. Its spread can be compared to nothing I have ever known except the flu epidemic. It has sprung up apparently spontaneously about isolated stations in the hills and on widely separated ranches. A new weed invasion is under way but the color of the foe has changed and for the next ten years the landscape will be purple.

SOUTH SEA FRUIT

By J. O. STANCLIFF

THE bananas in the Tahiti market are divided into about five principal kinds, as follows: (1) The so-called "Rio" bananas which, while very good, do not compare in sweetness and flavor with, (2) The "Samoa" bananas, or, as the natives and Chinese call them, finding their "h's" easier to pronounce than their "s's," *meia* (may-ya) *hamoa;* (3) Fig bananas; small, plump and somewhat fig-like in flavor, higher in price than either Rios or Samoas; (4) Native bananas, described above; and (5) The *fei,* or mountain plantain, growing in the remotest tangles of the hills, and brought down daily in

considerable quantities on the shoulders of muscular natives, often serving as their only bread. The outside of the Papeete-bound motor stage from Taravao is always hung heavily with bunches of feis, almost hiding the human freight from view. Feis are found on Fatuhiva, Marquesas, and perhaps on some of the other islands of that group.

I have also eaten delicious bananas raised by Madame Keane of Tahiti, which had a distinct apple flavor. She is of the Keanes of Tahauku, of whom Robert Louis Stevenson has written.

The excellent bananas of the Marquesas are of two main varieties, by far the commonest being of a handsome, medium-sized light yellow type; and the other a large, plump sort, not good eating until fully ripe, which is called in Tahiti the "native" banana. The Marquesan bananas grew in a grove halfway up Tahauku valley, and the handful of Tahauku natives went and helped themselves at need.

At first glance a full-grown banana plant, which takes a year to mature, looks too formidable to fell with a tiny pen-knife, but having lost my huge Hartford-made knife by theft,—some native presumably needing it more than myself,—I made shift very well to cut down my banana trees either with a steel cooking knife or else the pen-knife. So much for the succulence of banana trunks and Yankee resourcefulness. Having removed the green bunch from the fallen plant, I found that I obtained the sweetest bananas by hanging it where it would get the sun part of the day, although this may be contrary to the usual practice.

There is a valley of Hiva-oa in which the banana plants are of a much taller variety, half as high as the unusually lofty coconut palms which also grow in that valley. The

palms there are so tall that I was warned against sitting under one. Falling coconuts sometimes injure, but I have never heard of such an injury resulting fatally.

Polynesian mangos are of all flavors, one might almost say, from peach through strawberry and cherry to lemon. With their oval plumpness, and the golden, often roseate, bloom on their cheeks, they may be said to outpoint the finest peaches of our own land. Papeete urchins belabor the trees with stones and clubs long before the fruit is ripe. For this reason and for their abundance, they might aptly be termed the Apples of the Tropics.

Scattered through Marquesan valleys and growing to an even greater size than the oak-like mangos, are *vi*-apple trees (*Spondias dulcis*). The fruit when at its best is delicious. It is yellow, smooth-skinned, and round or nearly so. The fibrous exocarp suggests pineapples in flavor and texture,—and sour apples in the poorer specimens, especially if you peel them with your teeth. The skin, like the skin of mangos, is not good eating.

What appears to be a parti-colored bean, strewn along the trail between Tahauku and Atuona, some time in the early part of each year, is the stone of an oval black "cherry" which is borne upon trees well established in Atuona, brought in no doubt by missionaries. It is called in French the *pistache*. This cherry is a good thirst-quencher and affords variety in the diet, but I never heard of their using the stones for anything, as they do pistachio nuts.

Some distance up beautiful Atuona valley an obliging half-caste has planted a rocky hill to papayas, and once or twice at the height of the season I called there for these luscious yellow tree-melons. Hundreds of the fruits were ripening or rotting on the trees, or being eaten by the rats,—a fate ill-deserved indeed. Papayas also grow wild to some extent along the trail skirting the island cliffs.

Guavas, when ripe, are yellow with red, seedy pulp, and good as a thirst-quencher along the drier trails. Once I found a smaller bush guava with yellow pulp and a flavor like that of ripe strawberries, on the trail east of Tahauku. There were only a few specimens, and I suspect it was planted by birds who carried the seeds over from Tahauku, where the Keanes planted several kinds of guavas in the early days. The common guava, its wood tough as hickory, forms extensive thickets, like our shrub oak, on some plateaus of Hiva-oa.

The oranges of the Marquesas are not so fine as those of the Society Islands; at least, I saw more and larger ones in Raiatea and Tahiti than in Hiva-oa and Tauata. Often a sort of shaddock is found, very handsome to behold, but the multitudinous golden fruits are soft and worthless for eating. Once I found a sort of lemon, up Fautaua in Tahiti, with a very thick skin, corrugated like a brain. Limes are very numerous on all the islands.

I saw a native in Atuona eating a durian; and the avocado was formerly cultivated in Tahauku, but the trees, where still existent, now bear almost no fruit. A whitish fruit related to the Malay apple strews high trails in the Marquesas and Tahiti and is called in Tahitian the *nono*. When decayed it gives forth an evil odor. It may be edible but I never tasted it.

DR. WILLIAM SAFFORD

By Donald C. Peattie

ON January 10, 1926, at his home in Washington, Dr. William Safford, economic botanist of the Department of Agriculture passed away. His going is not only a grief to his friends but a great loss to botany. No one in the government service, perhaps no one in the United States, had a broader grasp of economic botany. And with him passes away too the type of the all-around naturalist, of the old style to which belonged many-sided men like Darwin, Lubbock, Von Martius, and Rafinesque. The modern era of over-specialization, when it is out of vogue to use the eyes, and science is become entirely a test-tube experiment, has almost obliterated that investigatory, curious, rambling and kindly fellow, the old-fashioned naturalist. To that order Dr. Safford belongs. I know of no one who can quite replace him.

Others will write of his actual achievements in the world of science, of his list of articles and books which probably runs into the hundreds and ranges from conchology to botany. I would speak of the man himself, one infinitely kindly and sweet in character, tireless in his work, and catholic in his love of the natural sciences.

Dr. Safford was born in Chillecothe, Ohio, in December, 1859 and retained throughout his life a strong sense of loyalty to his state and his numerous family in that state. As a young man he entered the Navy and there his scientific traits were at once recognized and he was enabled to study marine biology. Through the Navy, too, he was enabled to study at Yale. But it was at the close of the Spanish American War that his great opportunity came.

The little island of Guam, which in 1898 did not even know that as a Spanish Dominion it was at war with the United States, was captured by our Navy without a blow. Fortunately for America and Guam, Dr. Safford became Vice-Governor of the island upon our occupation of it. In that little, out-of-the-way spot Dr. Safford began his investigations which resulted in his splendid book "Useful Plants of Guam," which is more than an economic botany, more than an appreciation of the island and its people; it takes one to the island and gives him the whole spirit of the place. In that work we learn Guam's history, its ethnology and linguistics, its geology, fauna, and flora, and even its epidemics! The book is Guam itself, a compendium in a nutshell.

I have heard from Dr. Safford that when the island was first occupied by us, there were persistent attempts by American adventurers to carpet-bag the helpless natives. And from other sources I have heard that it was Dr. Safford who put a stop to this exploitation and, further, that his superior in office has often been assigned credit for the humane work for which Dr. Safford himself was responsible. Whatever may have been Dr. Safford's share I am sure, from knowing him, that it was a large one. A kinder spirit never lived. And he, if anyone, was one to sympathize with the culture of a primitive and helpless people and to wish to preserve it. But he was not merely a sentimental admirer. There was firmness in his character, a touch of iron, that would give him the strength to combat disintegrating forces.

From the publication of the botany of Guam Dr. Safford became an authority in science. For the next quarter of a century he devoted himself to economic botany, publishing more papers in that brief period than most scientists do in a life time. He had none of that indolence or poverty of self expression that characterizes many good observers

of today who somehow never get around to publishing any results. But Dr. Safford was not hasty; he was simply a very rapid worker.

A venturer into many fields, was Dr. Safford, and for this fearlessness I have always admired him. To attempt the feat of being an economic botanist, a zoologist, a linguist and an ethnologist at the same time is almost certain to draw critical fire from narrow specialists in all those fields. And in a narrower sense he was probably not as famous an ethnologist as one who studied nothing but human cultures. But I submit that exactly because he was also a botanist, a zoologist and a linguist, he was in many regards more fitted as an ethnologist than many without his broad training. I cannot forbear to speak in passing of his great linguistic gifts. Besides a knowledge of all the great western European languages, especially Spanish, he was deeply versed in tongues that will remain a mystery to the rest of us, Aztec, Maya, Nahuatil, and Polynesian dialects. These gave him an ability to delve in the sources of ethno-botany which are denied to most others.

At the time of his death he was engaged with Dr. Berthold Laufer, the linguist of the Field Museum in Chicago, in a very important study of the origin of the cultivated plants of America and their distribution in early times in the Old World. I am not certain, but I doubt if that work was near enough to completion ever to see light unless Dr. Laufer is able to carry on the botanical part alone. Dr. Safford had, however, practically completed his great work on the "Useful Plants of Mexico," which is to appear as a Contribution from the National Herbarium.

On the 17th of March, 1924 Dr. Safford, while driving his car, was stricken with paralysis from which he never made more than a partial recovery. In his historic old home on Mt. Pleasant Street, surrounded by his beautiful collection of shells and his library, which, by the way, in-

cluded that of Robert Louis Stevenson which he had bought in Samoa, Dr. Safford worked diligently on. He never, from the day of his first stroke till his death missed but two days from active work, dictating his books to his wife and his secretary and keeping up a tremendous correspondence with scholars the world over. His final illness lasted but a few days. The day before his death from pneumonia with heart complications he was still dictating his writings. His passing was quiet and swift.

Dr. Safford in personal appearance was unforgettable, with his cheerful face, his vivacious manner and his sweet voice. People often compared him to Mr. Pickwick and he did not appear to mind this; in fact he took the part of that jolly little gentleman in several amateur performances. Rather short in stature, gently witty, with the complexion of a healthy child and the manners of a courtly gentleman of the old style, he was, in the most complimentary sense of the word, a "character." A character, indeed, such as we who knew and loved him will never cease to admire and regret.

THE ROMANCE OF THE OCONEE BELLS

SHORTIA galacifolia, known as Oconee bells, and sometimes as bear's-foot, coltsfoot, and one-flower coltsfoot, is a beautiful little plant of the heath family which remains to this day scarce enough generally to be considered one of the rare plant treasures of America and greatly in need of protection. It was found originally in the mountains of North Carolina by the celebrated French traveler-botanist Michaux toward the end of the eighteenth century.

When Dr. Gray was in Paris in 1839 he observed in the herbarium of the elder Michaux an unnamed specimen

which consisted merely of the leaves and a single fruit and which the label stated had been collected in *les hautes montagnes de Caroline*. On his return Dr. Gray hunted assiduously for it in the mountains of North Carolina but wholly without success. Two years, later, however, he ventured to describe the plant which he said had the habit of a *Pyrola* and the foliage of *Galax*, and dedicated it to C. W. Short, the eminent botanist of Kentucky. Thereafter no botanist ever visited the region of North Carolina without searching for *Shortia*.

It was not until 1877, however, that it was found, and then quite accidentally, by G. M. Hyams, a boy who knew nothing of the good luck that had befallen him. He had picked it up on the banks of the Catawba river near the town of Marion, in McDowell County, North Carolina. Fortunately his father was a professional herbalist and through a correspondent, finally learned the true nature of the plant. It had been collected when in flower and thus Dr. Gray was able to substantiate his ideas of the genus and complete his description. So with renewed energy it was searched for among the mountains, but always without success.

In the autumn of 1886 professor Sargent visited the mountainous region of North Carolina about the head waters of the Keowee river with the object of re-discovering *Magnolia cordata*. At Hog Back, now called Sapphire, he was met by Mr. Frank Boynton to whom he showed a leaf that he had gathered, asking what it was. Mr. Boynton at first thought it was *Galax* but on looking at the leaf more closely said he did not know. That evening a letter came from Dr. Gray in which he urged them to discover the habitat of *Shortia*. Mr. Stiles, the editor of *Garden and Forest*, said in a joking way: "That is *Shortia* you have in your hand." This proved to be true. The leaf was

Shortia. Professor Sargent had found it just ninety-eight years after Michaux's discovery and probably near the original spot.

The following spring Mr. Harbison started out in quest of it. He went beyond Bear creek to the forks of the rivers and there saw it growing in great masses; acres, in fact, covered as thickly as clover fields. Wagon-loads were eventually taken away and still there appears to be no diminution in abundance. So the search for *Shortia* ended.—*Abridged from an article in Wildflower.*

THE MULLEIN

By LUCINA H. LOMBARD

OUR earliest American colonists brought with them the seeds of the mullein (*Verbascum thapsus*), the gold of its blossoms vying with that on the flag of Spain into which country it had been introduced by the Phoenicians. So it has come to us with the perfume of four centuries of summers to offset its bitterness. And added to that are thousands of years of legend and romance in the Mediterranean.

When the old Greek philosophers burned their "midnight oil" they used the dried leaves of the mullein as wicks in their quaint pitcher-like lamps. Later when the stalwart Romans marched in long processions with flaming torches held aloft, these same torches were simply mullein-stalks that had been dipped in tallow.

In the days when medical science was in its infancy, the mullein was considered a very important plant. Even now it has its part to play, being used in cough medicines, as an anodyne in many inflammatory diseases, and in preparations for the relief of asthma. Not alone are the leaves made use of, but the flowers and seeds have each their own peculiar properties.

The mullein has been known at different times and in different places by a variety of names, as Adam's flannel, Jupiter's staff, candle-plant, cow's lungwort, flannel-flower, blanket plant and beard-plant, the last giving the name to the genus from *barba* a beard, hence *Verbascum*. Perhaps the prettiest name is American velvet, given to it in England where it is planted in gardens to form a back-ground for lower-growing flowers, the English people evidently thinking it a native American.

The circle of the year is well illustrated by the mullein. The first season the plant develops a low rosette of gray-green woolly leaves which keeps fresh, even in winter, being found on the sunny slopes of hills and in sheltered nooks among bowlders. Early in the second summer, however, the plant sends up its seed-stalk which takes its time to grow, putting out more woolly leaves, each one smaller than the one before and finally ending in a long spike thickly set with buds that open a few at a time. Of bird visitors it has many; those that eat the fertilizing insects as well as the seed-eating class that are frequently seen swaying on its tall flower-stalks.

NEW ZEALAND PLANTS

By Mrs. M. E. Hardy

WE have the habit of thinking of the rocks as our old earth's histories and story-books, but the years are teaching us that there is another teller of old tales, some of which the rocks have torn to pieces and blotted out. Plants, though fragile, sometimes keep records better than the rocks. Geology tells us that little New Zealand has a hard time getting on our map at all; that it has again and again been carried down and raised up—a mile up or down being single steps in the little island's tragedies.

Counting New Zealand's trees, herbs and grasses, we learn that there are close to a thousand which are indigenous to the islands and about two-thirds of these are found nowhere else on the globe. We are further taught that many of the remaining plants are allied to those of South America and Africa rather than to the flora of their near land neighbors. Science regards such plants as historians who keep the record of a time when New Zealand and South America and Africa were nearer together or belonged to a single land mass.

The little fuchsia tree in New Zealand is one of these plants that with persistence has kept the record of that far-away time, ages nearer the beginning. Change of climate and of habitat have not changed the historian and we find it identical with the fuchsia of South America and our own fuchsia of Mexico, the same that we nurse in our conservatories and in our summer gardens. New Zealand plants are evergreen, but the fuchsia, true to the habits of its early life and the trust committed to it, retains its familiar habit of dropping its foliage.

There are also stranded plants that persist upon cold mountain sides which show their descent from tropic parents. They have refused to die and have accepted their changed conditions with something akin to human courage and contrivance.

Australia and Tasmania, at present New Zealand's nearest land neighbors, abound in flowers that form a riot of color but we are surprised that so few flowers give beauty to the New Zealand roadsides. For flowers we must go to the mountains and to the borders of the bush. And there we find them mainly white, pale yellow or green. Science has suggested that these were the primal colors of flowers.

Of all New Zealand's trees, shrubs and herbs, not over a dozen kinds have really brilliant flowers. The myrtle

family is the one that gives the greatest glory of color. Of these the Pohutukawa or Christmas tree, as it is commonly called, is king. We all love the snowy manuka though "aggressive as bracken." On sour or sunbaked soil where nothing else will grow, it blossoms so abundantly as almost to hide its glossy leaves with its snow. When beaten to the ground on a wind-swept heath, it makes its little space beautiful and fragrant as a king's garden. When sheltered in a canyon or on the border of the bush, it becomes a tree.

RABBIT-FOOT CLOVER.—Along the streets of Sherborn, Mass., grows a very attractive weed, *Trifolium arvense*, that likes sandy soil and hence never appears here in Pennsylvania. It is no wonder I did not recognize it as a clover; the silky head of flowers is certainly unlike any clover-head I ever saw and the leaves are so small and slender no one would notice them at first though the plant does branch and fork in a clover-like way. The florets are crowded closely in a cylindrical head and the tube of the calyx is coated with gray hairs. The five spreading sepals are long, slender, pink, and bear delicate gray hairs, not arranged like a feather as one would suspect. The sepals are the plant's chief beauty and make the head one mass of soft hairs. In the heart of each calyx is a dot of yellow that is the corolla. It gives a touch of color to the whole, but is so very short and insignificant. It seems strange for sepals to push out and take the most prominent place in a flower. Ordinarily they keep in the background. —*Nell McMurray.*

NOTE *and* COMMENT

NIGHTSHADE BERRIES HARMLESS.—A correspondent writes: "I fear you are much mistaken when you say the berries of *Solanum nigrum* are not poisonous. I was called last summer by a farmer who had several sheep die and they died from eating this plant which was full of ripe fruit. They seemed to have an appetite for it. It grew plentifully in a clearing and there was no other poisonous plant in the enclosure. I searched carefully. It is known to be poisonous to stock. I know of a child here in this county that ate some of the fruit and it nearly died. I have just turned to Millspaugh's 'Medical Flora,' and on pages 125-126, you will find he says the fruit is poisonous. You speak of pies and sauces being made of the fruit. As I understand it heat destroys the poison." The fruits of tomato, and elder, and the tubers of potatoes, are edible and harmless, though the plants that bear them are poisonous. It seems quite likely that sheep may have died from eating the *plant* even if the fruits were edible. On the edibility of the fruit, however, we have very first-class evidence. No less a personage than Dr. C. E. Bessey, one time Professor of Botany at the University of Nebraska, wrote in *American Botanist* Vol. 9, page 92, as follows: "I was lecturing on the properties of the plants constituting the Solanaceae and, as a matter of course, said that the berries of the black nightshade (*Solanum nigrum*) were poisonous. A young fellow from Fort Dodge spoke up and said that the people in his neighborhood made them into pies, preserves, etc., and ate freely of them. I answered him as became a professor of botany by saying

that it is well known that the berries of black nightshade are poisonous; the student must have been mistaken. That was the young professor's way of settling things and this particular thing remained settled for him for some years. After a while, however, I learned that the people in central and western Iowa *actually did* eat black nightshade berries and they were not poisoned, either. Later I learned the same thing in Nebraska for this species and still more for the spreading nightshade (*Solanum triflorum*) whose larger berries were freely used by the pioneers in the early days when other berries were scarce upon the Great Plains." The same volume of *American Botanist* contains a report from the U. S. Department of Agriculture which pronounces black nightshade berries perfectly wholesome when ripe but unsafe and probably poisonous when green. This latter fact probably explains the conflicting stories regarding the wholesomeness of the fruits. They do not appear to be poisonous when ripe.

DEATH OF GEORGE H. TILTON.—Rev. George H. Tilton, for many years a subscriber to this magazine and a frequent contributor to its pages, passed away at his home in Melrose, Mass., on January 8, 1926, at the age of 81 years. He was the author of the "Fern Lover's Companion," a volume issued in 1922 which has enjoyed a wide popularity. At the time of his death he was preparing a companion volume on the mosses. Among a number of earlier works is one on the plants of Lancaster, N. H.

CORNELIAN CHERRY IN WINTER.—Mr. Harry G. Wolfgang has added another interesting plant to the list of species that may be easily brought into bloom in the house in winter. Twigs of the cornelian cherry (*Cornus mas*) received from him on January 20th, and placed in water, were in full bloom in less than two weeks. The cornelian cherry is a European shrub or small tree and like its rela-

tive, the flowering dogwood (*C. florida*), forms its flower-buds in late autumn. During the winter these are protected by four conspicuous scale-like bracts. In the flowering dogwood, these bracts enlarge in spring to form the white petal-like objects which many suppose constitute the real flowers. The cornelian cherry has somewhat the same habit, but there is a sort of double blooming. First the bracts enlarge, assume a yellow color, and closely similate a flower; later the true flowers on slender stalks, twenty or more in an umble-like cluster, open to form a feathery inflorescence. Although the flowers are not large, their abundance and yellow hue a color quite unusual in dogwood flowers make them very attractive. They last a week or more in water.

Acid Soils.—By this time it must be pretty generally known that the character of the soil determines to a very great extent the kind of plants that can grow in it. The majority of our cultivated species can thrive in any ordinary garden soil, but some of the handsomest of our wild plants will not survive long in such situations. If we wish to grow azaleas, rhododendrons, pitcher-plants, trailing arbutus, moccasin flowers, many other orchids, huckleberries, and the like, the soil must be made acid, if it is not already so, and must be kept in that condition. From an excellent article by Dr. E. T. Wherry, in the *Wildflower*, we learn that the soil can be put in proper condition by the use of tannic acid, ammonium sulphate, or aluminum sulphate. The first named is said to be the best for the purpose but it is the hardest to get, though it only costs about ten cents a pound. The second is somewhat poisonous to the acid-loving plants of woodlands, but the third, costing about five cents a pound, is unobjectionable. Soils may also be made acid by mixing with them pine needles, bark, old sawdust or acid peat, but the process is, of course, much

slower. Even after a soil has been made acid it may become neutral again through the activities of burrowing animals, earthworms, and other creatures. To make sure that the soil is acid, or to test other soils for acidity, one should mix a small sample with five times its bulk of rainwater or distilled water, and shake the mixture well. A drop of bromcresol purple of about 0.05% strength (purchased through the druggist) is placed in a clean white dish and five or ten drops of the clearest soil extract is allowed to mix with the indicator. If the mixture now becomes purplish in color the soil is nearly neutral, if brownish it is slightly acid, but to be acid enough to suit the more particular acid plants, it must show a good clear yellow. When the right kind of soil is provided, these otherwise delicate plants come to unbelievable vigor.

PACKING PLANTS FOR THE MAILS.—The season is again with us when we have frequent occasion to send plants through the mails. If the specimens sent are for identification, one should be sure to secure some of the lower leaves and fruits and seeds as well as flowers. They should be packed as soon after gathering as possible and a tin box is superior to anything else for mailing them in. The plants should be lightly sprinkled with water, or a bit of moist sphagnum moss included to keep them fresh. The sphagnum may be obtained at the nearest florist's. Press the plants in rather closely and fill any remaining space with wads of paper or excelsior. If a paper box must be used, it would be well to wrap the box in waxed paper and perhaps the flowers also. When entire plants are sent by mail, it is not necessary to include any of the soil in which they grew. Wash the soil from the roots gently and immediately wrap them round with damp sphagnum. Then roll each in a piece of newspaper, tucking in the lower end after one turn in order to keep the sphagnum in and the

plants moist. Several small plants may be rolled up together. Single plants may be sent in a small tin box, but larger numbers may be packed in a fiber box such as may now be obtained at any grocery. The whole aim is to keep the plants moist until they reach their destination. It is well to remember that some States have become so afraid of importing plant pests, that they quarantine against nearly everything. Find out if your plants are mailable before you attempt to mail them. In general, however, little objection is made to the mailing of herbaceous specimens in small quantities. If plants cannot be mailed, one must resort to sending seeds. As yet, there has been no objection to these.

FLOWER IDIOSYNCRASIES.—A subscriber asks for information regarding the statement that there is something about some persons that violets and the more delicate sorts of roses greatly dislike and which causes them to withhold their perfume and droop when worn or carried by such persons. It may be said that flowers do not exercise any choice in such matters but that there are cases in which practically all flowers behave as indicated. The writer is well acquainted with one person who cannot wear the hardiest flower for a few minutes without its beginning to droop. This has happened so often that the person, though a lover of flowers, does not attempt to carry valued bouquets but gets somebody else to transport them. Frequent experiment has shown that flowers of equal freshness will wither much sooner with this person than with the average individual. What causes this difference does not seem to be known. It might be inferred that a greater radiation of the bodily heat has something to do with it, but this does not seem to be the case. Further data on the subject will be welcome.

MATRIMONY-VINE.—The reason for associating the name of matrimony-vine with *Lycium halimifolium* is not very apparent. It is possible, however, that it originated in the same circumstance that made orange-blossoms the customary flowers for the bridal bouquet. It is recorded that in ancient times the Saracen ladies wore orange blossoms as a symbol of fertility, since it is well-known that the orange tree bears flowers and fruits in all stages of development at the same time. This habit of flowering and fruiting continuously is also characteristic of the matrimony-vine. Unlike most of our wild plants, it has no distinct season of bloom, but continues to put forth its flowers and ripen its fruits throughout the warmer part of the year. By mid-summer it exhibits many ripe fruits as well as flowers. Until a better explanation is forthcoming, therefore, we may infer that this is the correct explanation of the name.

LAUNCHING WINGED FRUITS.—Fruits modified for wind-distribution are common and well-known, but nobody seems to have noticed that in addition to providing all its children with wings, the mother tree ensures their getting a good start in the world by launching them upon the wind in the best way for a successful flight. The wings of most seeds are attached in such a way as to cause them to spin around like an air-ship propeller and thus delay their fall to the earth. A few trials with almost any winged seed or fruit, however, will show the experimenter that it is a matter of some importance as to which end shall go first. As they hang on the tree they are in the proper position to begin spinning as soon as released from the tree. When reversed, they usually fall almost straight down without much other motion. One of the best fruits to illustrate this is that of the tree-of-heaven (*Ailanthus glandulosus*). When properly launched, it not only revolves about its long

axis, but spirals down as well. Few winged fruits have a more interesting flight.

DEADLY NIGHTSHADE.—Here is an interesting sidelight on that much abused plant, the black, or so-called deadly nightshade. In the Dictionary of Phrase and Fable, it says: "Nightshade is called *deadly*, not so much because it is poisonous as because it was used to blacken the eyes in mourning. It was the plant of mourning for the dead." In this item it is not indicated whether *Atropa* or *Solanum* is referred to, but considering the marked effect on the vision of *Atropa belladona*, it is not at all likely that that plant would be used for such a purpose.—*Leslie L. Haskin.* There seems to be no doubt about the deadly character of *Atropa*, but the statement as to its use in mourning seems to be a case of facts being made to fit the fable. After discovering how widely eminent men differ on even the derivation of common names, we have come to look with suspicion on extraordinary explanations.—ED.

DEATH OF JAMES H. FERRISS.—Just as this issue is going to press, comes the news that James H. Ferriss passed away at his home in West Park, Joliet, on March 17th in the 77th year of his age. He is survived by his mother, his wife, two sisters and two brothers. Mr. Ferriss was a well-known collector and patron of science. Interested in most phases of biology he was specially devoted in the land shells in which branch he became an acknowledged authority. He made numerous expeditions to the remote parts of the Southwest in quest of specimens and the new species there discovered are numbered literally by hundreds. Many of these bear his name and he has the added distinction of having, in *Ferrissiella Ferrissii*, a genus and one of its species named in his honor. His own collection of land shells was remarkably complete and abounded in type species. He has also species named for him in such

widely different groups as cacti, trilobites, and fernworts. In conjunction with others he has named many species in these groups. Although denied the advantages of a formal education, his unusual native intelligence, coupled with untiring industry overcame this handicap and made him a man of much knowledge and rare judgment. For nearly forty years he was editor and joint owner of the Joliet *Daily News*, one of the most influential newspapers in northern Illinois. Upon retiring from the editorial chair, he devoted his time to study and to the promotion of parks, playgrounds, and education in the natural sciences. He was active up to nearly his last hour and may truly be said to have spent his life in the service of his fellow-man. Mr. Ferriss was one of the original Commissioners of the Joliet Park System. He was especially interested in increasing the collections of shrubs and perennials and assembled at West Park one of the best collections of cacti in America. He was also a member of the American Association for the Advancement of Science, member and one time President of the American Fern Society, and member and Vice-President of the Illinois State Academy of Science. He has always been on the patron list of this magazine. Of time, knowledge, and money he gave generously to every worthy cause. In his passing Science has lost a most loyal supporter.

EDITORIAL

We were quite unprepared for the large number of congratulatory letters received from this and foreign lands regarding our twenty-fifth anniversary. The editor has tried to answer all of them, but if he has missed any he takes this opportunity to record his great pleasure at receiving so many unsolicited expressions of appreciation and goodwill. During the next twenty-five years, he hopes to deserve all of them!

* * *

Nearly everybody has a favorite section of magazine or newspaper to which he turns first when opening a new copy. If you have a preference for a certain department in this magazine, we should like to know it. What part do you read first? If we can find out what kind of matter a considerable number of our readers prefer, we shall of course give it special consideration. We hope a large number of our readers will express themselves in this matter; otherwise we shall be obliged to assume that they do not care two cents what we print!

* * *

Doubtless some who read the article on frost-flowers in the January issue of this magazine resolved to have some of the plants in their own gardens another year and see the remarkable frost ribbons for themselves, but they may have to forego this pleasure unless they live in a region where the plants grow. We have examined more than twenty catalogs of wild plants without finding the dittany (*Cunila origanoides*) listed. The editor has selected a

choice spot in his garden in which to grow these plants as soon as some of his readers make it possible for him to get them, but this seems about the only way he can get them, for the dealers do not have them in stock. This is only one of many instances in which the grower of curious or rare plants finds great difficulty in securing specimens not listed by dealers. Even when he is quite willing to pay for his specimens he cannot obtain them. The amateur gardener dislikes to take pay for his extra plants and equally dislikes to present them to strangers. When he finds an individual interested in his hobby, however, he is usually glad to help his collection along. It has been suggested, therefore, that a sort of society for the dissemination of interesting plants be organized, the scheme being to list all who desire to co-operate in the matter to the extent of offering seeds or living specimens of at least one rare plant, annually. The plants to be offered are preferably wildflowers desirable for cultivation, that are not offered by the trade, or such other specimens as have curious traits or unusual flowers to recommend them. Those who are interested will be registered and given a number to use in ordering. A uniform price of 10 cents a packet for seeds and 25 cents for plants will be required and the specimens are to be sent postpaid for this price. There are no dues nor fees and nobody has to buy anything. The design is simply to get together a group that has an interest in growing rare plants and a desire to help others to get them. The specimens will be offered through this magazine and the plants ordered direct from the persons offering them. An effort will be made to get unusual plants desired by members. Just at present we wish to locate somebody who can supply the dittany. For spring planting this magazine offers to send to registered members, seeds of *Pentstemon cobaea*. This is the largest of the pentstemons, much

larger than *P. grandiflorum* in spite of its name. The plant is a perennial with zygomorphic flowers that suggest those of canterbury bells. They range in color from white to pink and the flowering shoots are two feet or more high. It is expected that a number of plants will be offered in our next issue. All who are interested in this phase of flower study are invited to register. If you have seeds of plants you care to offer, please name or describe them.

BOOKS AND WRITERS

We see by the papers that Dr. Birdseye recently delivered an address on surveying the Grand Canyon of the Colorado. * * * That seems to be the popular way of surveying it. * * * We have had several bird's-eye views of it ourselves! * * * The editor of *Better Delphiniums* writes that the secret of growing delphinium flowers more than three inches across is to use the new types, plant in rich soil, and water copiously when the plants begin to bloom. * * * Well, we shall see; the editor has sent us some seeds for trial. * * * *Better Delphiniums* is a pretty lively publication and the editor is getting some surprising results out there in San Rafael. * * * *Our Dumb Animals* observes in a recent issue: "We have just learned with regret of a playground instructor advising the boys under him to catch butterflies for trays and lockets. Surely they were created for something better than such a purpose." * * * Well, we don't know about that. * * * Our personal impression is that they were created for the purpose of laying about a million eggs each, on our food and flowering plants so that the resulting larvae will destroy everything they can get their mandibles into. * * * *Our Dumb Animals* is one of our favorite publications, but we think it runs some risk of having the emphasis placed on the

second word in its name. * * * An ambitious gardening magazine of the Middle West, has published an article on bees by an eminent essayist, in which the workers were described as males. * * * The writer says that without the bees there would be neither corn nor other grains. * * * Wonder if the editor was away on vacation when this piece of misinformation got by or was simply no better informed than his contributor. * * * The plain truth seems just too tame for some people. * * * Last January a new sort of Ku Klux Klan started in the same incubator that hatched the first one. * * * An organization was formed in Atlanta for the purpose of putting the final extinguisher on all talk of evolution. * * * The society, which expects to have branches in every State, resolved that patrons of education should use every effort to "make unpopular, unprofitable and impossible the teaching of evolution." * * * Now isn't that just like a Fundamentalist! * * * It never occurs to him to investigate evolution; he doesn't understand it and what he doesn't understand, he condemns. * * * The Atlanta folks are reported to "bitterly resent" the efforts of those "seeking to make mankind a part of the lower order of animals" whatever that may mean. * * * In a little Kentucky town the citizens resolved that "we have found by experience that the subject of biology so readily lends itself to the teaching of evolution and we ask that it be eliminated from the curriculum." * * * Tennessee, Florida, Oklahoma, and Texas already have laws against evolution, and at this writing Mississippi is considering joining the Barbarous States. * * * We expect that some of them will soon be quarantining against this magazine. * * * A contemporary observes that some folks are more concerned as to whence they sprang than where they are going. * * * It is a strange phase of religion that has to be protected by law!

* * * We do not care whether anybody believes in evolution or not, but we do object to any group of people trying to prevent the free discussion of scientific problems. * * * There is to be a great international congress of Plant Sciences at Cornell University next August. * * * It will discuss plants from bacteriology and pathology to ecology and pharmacology with nine other departments in between. * * * All the eminent botanists will be there if they can get the time and the transportation. * * * Further information may be had of Prof. B. M. Duggar, of the Missouri Botanical Garden, St. Louis. * * * Alfred Gunderson is advocating an International List of the Families and Genera of Cultivated Plants with a view to simplifying the exchange of seeds and other specimens. * * * A preliminary list of about 25000 genera offered in the seed-lists of some hundred Botanic Gardens will be published by the Brooklyn Botanic Garden some time this year. * * * American narcissus growers have at last succeeded in keeping out foreign grown bulbs. * * * But they point to their great magnanimity in permitting the importation of eight kinds of small bulbs that few people plant. * * * In the matter of Doctorates conferred, the botanists seem to be holding their own. * * * There were 415 new Doctors in botany made last year against 393 in Zoology. * * * The chemists, alone, secured a larger number. * * * A new flora of Chicago and vicinity by Dr. H. S. Pepoon is promised for this spring. * * * It is to be issued by the Chicago Academy of Sciences. * * * Dr. John K. Small has also begun printing on a revision of his "Southern Flora." * * * It is to be a two-volume edition; the original volume was so fat that it ran a risk of bursting if anything more was added. * * * Just about now the Appletons are issuing a botanical book by Donald C. Peattie which is out of the usual run in that it discusses the trade in the

rarer vegetables—drugs, dyes, oils, cotton, tea, and the like. * * * It is called "Cargoes and Harvests." * * * We shall have more to say about it when the publishers forward a copy. * * * The Supplement to "American Plant Names" has been delayed by the great influx of new material. * * * Instead of 300 new names, the book will contain nearly 800. * * * We shall probably have to raise the price, but for the present it will remain at 50 cents, or 25 cents to owners of the book. * * * The Banana Trust is sure to be helped by a little pamphlet on the "Food-value of the Banana" issued by W. M. Leonard Co., Boston. * * * However, the banana deserves some consideration on its own account. * * * In the number of Calories per pound it excels the potato and all the other common vegetables except corn, beans, and peas, and it is reported to be fairly bulging with vitamines. * * * The banana is a sort of original germ-proof food package carefully sealed by nature. * * * But how can one who writes on this luscious berry call the plant a tree? It is a giant herb.

* * *

There are about 200 species of gladioluses in South Africa, and nobody knows how many times that many millions of their descendants flower every summer in North America. Beginning in 1596 when the first plants were introduced into England, the same year that the cyclamen and tomato were introduced into that country, they have steadily grown in popularity. It was not until about 1840, however, that much interest was taken in their culture in the garden, but recently the production of these plants has taken on all the aspects of a mild mania. To help matters along, A. J. MacSelf, author of numerous gardening books, has issued a book devoted to this particular group of plants. It is, of course, well known that comparatively few distinct species have contributed to the forms now grown in our gardens, but the author takes for

his title the all-including one of "Gladioli" and carries the idea into the contents of the book. From sowing the seeds, cultivating and hybridizing the plants to storing, marketing and flowering the bulbs and exhibiting the blossoms, nothing seems to have been omitted. The colored plants show examples of several improved sorts and the line drawings give details of many phases of the subject, including typical forms of the flower-spike as well as defective forms to be avoided. The book runs to more than 150 pages and will doubtless be read with profit by all who grow these ubiquitous flowers. It is published by Charles Scribner's Sons, New York and the price is $2.

In "The Relation Between Science and Theology," Dr. C. Stuart Gager has attempted the thankless task of trying to make scientific investigation square with the preconceived notions of such things held by those who will not think. In a much kindlier spirit than most scientists would be capable of under the circumstances, he points out that science deals with established facts and therefore cannot run counter to religion, nor for that matter can it be interpreted by theologians. The reason for the persistent opposition to certain aspects of science is discussed and explained. Originally suggestions of evolution in geology, chemistry, astronomy and the like were violently opposed, but familiarity with the facts has made such opposition ridiculous. Now the arguments center in the evolution of living things. Dr. Gager devotes much space to an explanation of the methods of science and to a clear account of the grounds upon which a belief in the evolution of living things is based. In reply to the question what science has to do with religion he answers "in a certain sense, nothing!" The two rightly considered occupy separate fields. The book is not designed to make converts to any theory of evolution but to show that the subject, properly understood, is not sufficient excuse for a quarrel between

the church and the scientist. All who are not fully conversant with the ideas upon which the so-called "theory" of evolution rests could do no better than to read this little book. It is published by the Open Court Publishing Company, Chicago, and costs a dollar.

Prof. F. L. Stevens' new book on "Plant Disease Fungi" is a later and re-written edition of his "The Fungi Which Cause Plant Disease," issued in 1913. The present work contains nearly 500 pages and attempts to describe the disease-producing organisms that affect cultivated plants. When it is known that many of these are microscopic, often live on a great variety of other plants and that few have been exhaustively studied by the plant pathologist, the difficulties in the way of making an accurate Manual may be realized. The species discussed are grouped under the three divisions Myxomycetes, Schizomycetes and Eumycetes, the last mentioned including the Phycomycetes, Ascomycetes, Basidiomycetes and the Fungi Imperfecti. The habitat and behaviour of some of these plants is most puzzling. One family with 49 species has been found on no fewer than 1500 hosts. In the genus Phyllostictina, a single species has been found on representatives of twenty different plant families. Still another has been found on 48 genera and 27 families. They are often very numerous as to kinds. The order Hypocrales has sixty genera and eight hundred species while many species, though minute, exist in a number of forms or "biologic races." The wheat rust, for instance, is now known to consist of some thirty such races, some of which affect wheat but lightly, though harmful enough on other grasses. Good keys to the genera are included in the book and the species appear to be adequately described. The effects produced by them on their hosts are noted and additional species that occur on wild plants are mentioned though not described. More than 400

illustrations help to make the work clear. The book represents a vast amount of research and study on the part of the author and will be valued accordingly by plant students. Like the author's earlier volume, the book is published by the Macmillan Company, New York.

It has ever been a difficult matter to make elementary botany understandable to the novice. The scientist, familiar with technical language finds it hard to express his ideas in ordinary terms and while the popular writer might make the subject entertaining, he is usually so uncertain as to facts as to prove but a poor teacher. Neither of these charges, however, can be brought against Prof. F. O. Bower of the University of Glasgow, whose book, "Plants and Man," is issued by the Macmillan Company of London and New York. A careful examination will show that the book covers what is practically the customary beginner's course in botany, with a certain ecological slant, but it is so free from technical terms and the matter is so differently treated, that even the scientists might fail to discover it. Moreover, the author has not found it necessary to stick closely to the fundamental facts, but has introduced into the more than 350 pages of his volume a great amount of supplementary information that makes it very entertaining. Among the chapters, selected at random, are Meadow and Pasture, Moor and Mountain, Kitchen Gardens, Timber, Bacteria, Textiles and Twine, Man's Influence on Vegetation and so on to the extent of thirty. About 150 excellent illustrations enliven the text. The Reviewer has found the book abundantly worth reading and thinks that others besides the novice will find it interesting. The beginner, of course, should enjoy it, though it must be remembered that this is an English book and consequently deals with English plants. This, however, in no way affects its value as a particularly lucid account of plant life.

Mrs. Francis King's latest volume is entitled "Chronicles of the Garden." It consists largely of articles previously published in various periodicals devoted to landscape gardening, beginning with a chapter on Round About the Spring Garden and ending with two chapters on Gardening in Winter and Garden Happiness. Between these extremes are a dozen chapters devoted to daffodils, gladioluses, flowering trees and shrubs and the gardens they inhabit. The book is not intended as a garden manual; it is for those more sophisticated people with gardens of their own who are interested in the garden experiences of others. The author gives her impressions, often superficial, it must be confessed, on all these matters. An unusual number of new varieties, named for people of no consequence, are mentioned, but since many of these are certain to be superseded by others in a year or so, the gardner will do well to investigate their merits before substituting them for satisfactory forms already in cultivation. As an indication of the state of gardening of the present, the observations are invaluable, as are the author's suggestions to garden clubs. In an appendix, planting suggestions are given for different styles of houses which are likely to interest all who have new plantings to make. The book contains 276 pages and is embellished with upwards of twenty-five unusually good full-page plates. It is published by Charles Scribner's Sons, New York, and costs $3.

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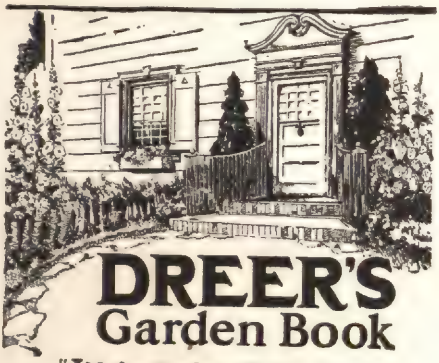

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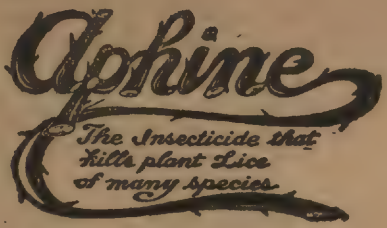

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THE GUM PLANT—*Grindelia squarrosa*

THE AMERICAN BOTANIST

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It is half-past eight on the blossomy bush;
The petals are spread for a sunning;
The little gold fly is scrubbing his face.
The spider is nervously running
To fasten a thread; the night going moth
Is folding his velvet perfection;
And presently over the clover will come
The bee on a tour of inspection.
Paul Scott Mowber.

THE GUM PLANT

By WILLARD N. CLUTE

IN the western part of our country, where dry air and soil make a difficult habitat for most forms of vegetation, the delicate wildflowers are replaced by numerous coarse species with hard rough leaves and usually yellow flowers. Several of these are called gum-weeds or rosin plants. The prairie gum-weeds are usually members of the Composite genus *Silphium*, but farther west the name is transferred to various species of *Grindelia*, one of the more noticeable of which, *Grindelia squarrosa*, is the subject of our sketch.

Grindelia squarrosa seldom gets farther east than the prairies of Illinois, but occasionally it appears along railroads and in other waste lands nearer the Atlantic. It may be quickly recognized by means of it roundish, thistle-like heads with projecting, recurved, involucral bracts. Usually the heads are crowned with yellow rays but there is a rayless form called the variety *nuda*.

The leaves and inflorescences of our plant are sprinkled with a white gummy or sticky resin which makes the

names of gum-plant, resin-weed and tar-weed particularly appropriate when applied to it. The gum or resin is of some medicinal value, being used for the relief of asthma and as a tonic. Fluid extract of Grindelia is a well-known external application for ivy-poisoning but its usefulness for the purpose is doubtful.

There are several other species in the genus *Grindelia*, but *G. squarrosa* is the one most widely known. It is hardy in the North Atlantic States and like so many other Western Composites, seems to be extending its range in that direction.

COMPARATIVE REGENERATION OF SPINESCENCE IN OPUNTIA AND AGAVE

By N. M. Grier

OPUNTIA, one of the Cactus family, familiarly known as the prickly pear, is regarded as a succulent form of *stem* xerophyte. *Agave* of the Amaryllidaceae is commonly termed the century plant and is classified as a succulent type of *leaf* xerophyte. The spines on *Opuntia* are thought to represent modified leaves of the side shoots appearing after the small deciduous leaves are shed. Those on the edges and tip of the leaves in *Agave* are largely, but not strictly epidermal in origin, apparently lacking therefore the kinds of fundamental tissue represented in the leaf rudiments of *Opuntia*, from which the spines are derived. For *Opuntia* it is stated that the spines furnish protection against animals, but more probably guard against water loss, for with reduction of leaf surface by the formation of spines transpiration is diminished. Their formation is believed to be promoted by strong illumination and dry air. It is probable that the spines on both plants exercise much of the same functions although as we shall see, the resemblance stops here.

Excellent greenhouse specimens of *Opuntia Engelmannii* Salm Dyck and *Agave americana* L presented an opportunity to determine the behaviour in regeneration of these somewhat analogous structures. The temperature of the greenhouse during these experiments hovered around 70 degrees F. while the atmosphere was moist enough to favor the growth of tropical ferns. The experimental plants were continued in their brightly illuminated location.

The spines and glochids, (hairs) on each areole of four adjacent joints of an *Opuntia* were clipped off close to the surface in December, 1923, while the lowest joint of the plant where it entered the ground was left untouched for a control. The maximum length of the spines cut off was seven-eighths of an inch. The plant was next examined nine months later, when it was found that but one seventh of the total number of areolae treated in this fashion had regenerated spines, these apparently growing out from the side of the location of the older ones. The regenerated spines were slightly thicker than those which had been removed, but their maximum length was only one-half inch. These have elongated but little since on the one joint left untouched in subsequent experiments. In this and the next case, regeneration of the spines was preceded by a raising of the glochids of the areolae into higher protuberances than those of the control. Three months later, the spines which had regenerated on the three remaining joints were again removed, and after two months the plant was again examined. Approximately one third of the number cut from the joint directly above the control had grown back, while only one-fourth had reappeared on a joint at right angles to it. The spines which grew during this second period of regeneration were longer than those of the control, attaining a maximum length of one and one-eighth inches, the minimum length being half an inch. One joint

failed completely to regenerate spines during this period. No difference in thickness was noted in the second crop of spines; however during this period the basal control joint developed a new branch, (joint), from one of the spineless areoles. While this was certainly associated with the reappearance of fewer spines in the upper joints, it of course can not be said with accuracy that removal of the spines induced it.

Removal of the spiny tips of the leaves in *Agave*, and the spines along their sides in December, 1923 brought no response. At least in approximately the same place on the leaf, absolutely no response in older or younger leaves was noted in nine months time. However, within a year after the operation, other spines appeared between the ones removed from younger leaves only. Two years following the original operation as many as three new spines had been differentiated between the localities of those earlier removed from young leaves, but the older more fully differentiated ones never responded. It is probable of course that the ones which appeared, did not do so under the stimulus of the operation but had been elements unaffected by it, developing normally in time. This latter experiment gives some idea of the rate of growth of the leaves in this plant, and those familiar with its habit, will realize how with difficulty, any added proliferation of the leaves could be associated with the operation. Consideration of what has been written will undoubtedly lead to the conclusion that certain of the general results obtained in the regeneration of the cactus spines would have been anticipated, since they alone are derived from all the fundamental tissues found in leaves, while those in *Agave* are more superficial in origin. Other responses of the cactus are better discussed after further experiments.

DARTMOUTH COLLEGE.

THE MEANING OF PLANT NAMES—XXVII

CARYOPHYLLACEAE—2

By WILLARD N. CLUTE

THE futility of attaching great importance to the common names of plants is rarely more apparent than in discussing such names in the Caryophyllaceae. The American members of the group are mostly insignificant weeds with few common names of any kind, while the more showy species are largely of foreign extraction with names that are naturally of Old World origin and not of great significance to us even if they ever had a meaning, which we are sometimes inclined to doubt.

As we have noted in a previous paper, the whole group is frequently known as the "pink-worts" or "pinks," not because of their color, but because the color we call pink happens to be the color of certain species whose petals are pinked or jagged! "Catchfly," another name common in the group, alludes to the sticky secretion near the joints of some species which is likely to catch and hold small insects. Other species bear the name of "chick-weed," probably from a fancied fondness of birds for the leaves or seeds, and still others have the name of "stitch-wort" which implies that the plants have the power to cure a stitch in the side or perhaps the bites of serpents. "Campion" is a term that refers to the habit of certain species of growing in fields, and "spurrey" is derived from the generic name *Spergula* from the Latin *spergo* meaning to scatter. With these explanations in mind, a large number of the names are easily interpreted, the different species being distinguished by common adjectives.

The plant commonly called "spurrey" is *Spergula arvensis*. It grows in cultivated fields but is not discouraged by sterile soil and most of its common names refer to this

fact. "Corn spurrey" alludes to its growing in the English corn (wheat) fields, "poverty-weed" and "pickpurse" seem efforts to shift the blame for poor crops from the soil to the plants, "sandweed" also alludes to its favorite soil, but "toadflax" is a misnomer. "Pine cheat" probably refers to the leaves which are quite narrow and pine-like. "Cow-quake" and "yarr" have no significance, so far as I am aware.

While the members of the genus *Spergularia* are all known as "sand spurreys" perhaps because confused with related plants, they are all more often known as "red-" or "purple-" "sandworts." *S. Canadensis* is further distinguished as "marsh sand spurrey" and *S. marina*, from its place of growth, is often "seaside sandwort" or "salt-marsh sand spurrey."

The plants best entitled to the name of "sandworts," if names signify anything, are the species of *Arenaria* whose generic name itself means sandy. Nearly all the common names in the group are descriptive of the plants or relate to the places in which they grow. Thus *Arenaria Caroliniana* is "mountain sandwort" or "pine-barren sandwort," *A. Groenlandica* is "starwort" and another "mountain sandwort," *A. stricta* is the "rock sandwort," *A. lateriflora* is the "showy sandwort" and "side-flowered sandwort," and *A. peploides* is the "sea sandwort," "sea-beach sandwort," or "sea-chickweed," "-purslane," or "-pimpernel," the last three doubtless repeating mistakes in identification.

All the foregoing are insignicant weeds so lacking in beauty as scarcely to attract a flower-gathering child. Another of these weedy groups is the genus *Stellaria* whose members are frequently called "chickweeds." The most abundant is naturally the "common chickweed" (*S. media*). This species is also "chicken-weed," "starwort," "satin-flower" (a misnomer), and "white bird's-eye" possibly in

allusion to the flowers, though these are quite inconspicuous. "Winter-weed" is a most appropriate name, for the plant thrives in the cool moist days of late autumn and early winter and covers the ground with green when all else is brown. *Stellaria pubera,* whose flowers are much larger, is the "great chickweed" or "star-chickweed." The "bog starwort" is *S. uliginosa* and this is also the "bog-," "swamp-" and "marsh-stitchwort" as well as "marsh chickweed."

Stellaria holostea came to us from Europe where it once had considerable repute as a medicine; in fact, this is *the* "stitchwort" and apparently the one for which all others are named. As befits its station it is called "greater stitchwort," and "greater starwort," as well as a long list of Old World designations including "adder's meat," "snake-flower," "snake grass," "thunder-flower," "snappers," "snap-jack," "piskies," "Easter-bells," "lady's lint," "all bone" and "white bird." If any of these have significance it has escaped the writer. They crop up, however, in the names of other members of the family and perhaps mean something to the people who gave them. Last of the Stellarias is *S. aquatica* which is, as its specific name hints, the "water-chickweed," and "water mouse-ear chickweed."

The real "mouse-ear chickweed" is supposed to belong to the genus *Cerastium.* The reference is to the leaves which approximate a mouse's ear in size. Our common species, *C. vulgatum* is the "common-" or "large- mouse-ear chickweed" or simply "mouse-ear." The "spring mouse-ear" is *C. semidecandrum* which is also known as "small chickweed." Still another "mouse-ear chickweed" is *S. viscosum,* which, as its specific name indicates, is the "clammy mouse-ear chickweed." The "clammy chickweed," without any mouse-ear about it, is *C. nutans.* This is the "nodding chickweed," a mere translation of its technical name, and

"powder horn," a more appropriate designation from the shape of the capsule like an old-fashioned powder horn. *C. arvense* is found in both Europe and America but its common names have mostly been imported. It is "field mouse-ear" or "chickweed," "starry grasswort," or "grass-weed" and "meadow chickweed." *Holosteum umbellatum*, the only species in its genus, with us is the "jagged chickweed."

The genus *Sagina* completes the weed-like division of the pinkworts. *S. nodosa* is sometimes called "spurrey" but it is better known as "pearlwort" or "knotted pearlwort." *S. procumbens* is the "creeping pearlwort" and also "make-beggar" and "poverty" because it grows in dry sterile fields though it does not contribute to the poverty of the owners. This plant is also "bird's-eye" and "breakstone."

Of all our species of Caryophyllaceae the one with the greatest number of common names is undoubtedly that familiar inhabitant of the waysides commonly known as "bouncing Bet," or "-Bess." (*Saponaria officinalis*). The specific name indicates that it was once part of the pharmacist's stock in trade and it has not entirely fallen into disuse yet, for it is still valued in some parts for its saponaceous qualities, and known as "soapwort." The roots contain a considerable amount of natural soap which is used for washing all sorts of fine fabrics. Other names are "crow soap," "soap-root," "latherwort," "scour-weed," and "fuller's herb" and need no definitions. The plant was once a border flower in old-fashioned gardens and to this fact may be ascribed such names as "old maid's pink," "hedge pink," "chimney pink," "Boston pink," "London pride" and "wild sweet william." No doubt several of these names have been given through ignorance or through being mistaken for better species as, indeed, the name of "mock gillyflower" hints. "Sweet Betty" and "flop-top" may

apply to the plant's flaunting flower-trusses. "Lady-by-the-gate" is a poetic designation, but "soapwort gentian" belongs to a different species. Our only other species of *Saponaria* is *S. vaccaria,* called "field soapwort," "cow-herb," "cow-basil" and "cockle."

Like the "soapwort," the "corn-cockle" (*Agrostemma githago*) bridges the gap between the weedy members of the Caryophyllaceae and the species that are commonly valued for their flowers. The "corn cockle," itself, is not without beauty, but it has fallen into disrepute because of its weedy qualities. The common name of "corn rose," "corn campion," and "corn pink," not to mention its common common name of "corn cockle," tell plainly enough of its growth in English wheat-fields, where, of course, it is a weed. The word cockle, itself, means a tare. "Mullein pink," "woolly pink," and "old maid's pink" are probably more appropriately applied to species in other genera, though it may be surmised that "Old Maid," applied to many species has been given in a derogatory sense. "Crown-of-the-fields" is a literal interpretation of the generic name and "rose-of-heaven" may possibly have been given as another version of it.

The genus *Gypsophila* has a single species in our flora, *paniculata,* which is known as "baby's breath," obviously because of the numerous tiny blossoms in a cloud-like panicle. It is also called "panicled gypsophila," a translation of the specific name, and "chalk-plant," a translation of the generic name. "Gypsum pink," therefore, needs no explanation.

To record the names in the genus *Dianthus* is largely to repeat the name "pink," with a varied assortment of adjectives. *Dianthus armeria* is "Deptford-" "wild-" or "grass-pink." *D. deltoides* is "maiden-" or "meadow pink," and "spink," the latter an ignorant derivation of "pink." *D.*

prolifer is "childing pink" or "childing sweet william" being, as its specific name indicates, prone to the production of offspring. The best-known species of the genus, is familiar in our gardens as "sweet william" but is also known as "bunch-" or "French pink." This is another "London pride" and "London tuft" as well as "sweet-john." "Bloomy down" is evidently "blow-me-down" which has no more significance for the writer than has another name, "snowflake." "Sweet william," a name applied to a number of plants with round flowers in this and other genera, is reputed to have been originally "sweet oeillet" or "sweet violet" and therefore very ancient, since "violet" was once applied to any bright flower and only later came to have the restricted meaning we now give it. It may be mentioned in passing, that this is the genus to which the "carnation" (*D. caryophyllus*) belongs. It has only lately been called "carnation." It was originally "coronation"—the plant used in coronels or garlands.

In the genus *Lychnis*, one of the common species is *L. chalcedonica* called "scarlet lychnis" and "scarlet lightning," the latter probably made from the first. In spite of the fact that the flowers are five-parted, the plant bears the name of "Maltese cross," "cross-of-Jerusalem" and "knight's cross." "Fire-balls," of course, refers to the scarlet flowers and "none-such" to its reputed value, while "sweet william" may or may not be regarded as worth recording for this plant. The real "mullein pink," is *L. coronaria*. Its hoary leaves make it also "dusty miller" and "mullein lychnis." "Rose campion," "gardener's delight" and "gardner's eye" are self explanatory.

Lychnis alba is the "white-" or "evening campion" or "evening lychnis," because it opens at twilight. It has a counterpart in *L. dioica* which is the "red campion," and "morning campion." The first-mentioned is the "white

robin" and "cuckoo-flower," the second is "red robin," "poor robin" or simply "robin." Both are "bachelor's buttons." *L. alba* is "snake flower," *L. dioica* is "adder's flower," which amounts to the same thing. *L. alba* is "cow rattle," "bull rattle" and "thunder flower," its counterpart is "red bird's-eye," and "soldiers," the last name probably alluding to its color like that of the british soldier's coat which once caused them to be dubbed "lobster-backs" by enraged and hostile yankees. "White soapwort" indicated a resemblance to the true soapwort, but it must be confessed it is not noticeable. *Lychnis floscuculi* is, if the specific name means anything, the true "cuckoo flower" from which all the others have been named. It is likely that this name is given from a belief that the flowers open about the time the cuckoo returns in spring. The plant is also called "cuckoo" and "crow-flower," the latter a misapprehension. It is sometimes called "meadow campion" or "meadow pink." "Indian pink" is a good illustration of the way a good idea in common names spreads. No red man ever saw the plant until introduced by white settlers and when he did, he was probably too busy with other matters to give it a second thought. "Ragged robin" is one of the plant's best known common names and this in some sections becomes "ragged jack." "Marsh gillyflower," strange as it may seem is derived from clove, probably from the fragrance which is clove-like. The true gillyflower was originally clove gillyflower or clove pink. Gillyflower has a great variety of spellings in different languages, but all reduced to the lowest terms signify a clove.

A number of other campions is found in the genus *Silene*, but here, though "campion" and "pink" are freely used, the significant term is "catchfly." *S. antirrhina* is the "sleepy catchfly" because it rarely looks fully open and

alert. "Snapdragon catchfly" is due to the specific name and looking at the plant one wonders how it got it. *S. conica* is the "corn catchfly," *S. regia* is the "royal-" or "splendid catchfly," *S. noctiflora* is the "night-flowering catchfly" and *S. rotundifolia* the "round-leaved catchfly." These names are practically all translations of the specific names. Similarly *S. nivea* is the "snowy-" or "white campion," *S. acaulis* is "moss campion," "moss pink" or "cushion pink," *S. Virginia* is the "fire pink" and Indian pink" from its vivid flowers, while a second species of similar color, *S. Pennsylvanica* is "wild pink" or "Pennsylvania catchfly." *S. nutans* is "nodding catchfly" and "Dover catchfly." Perhaps "Nottingham catchfly" was suggested by the preceding name.

Silene stellata, as indicated by its specific name, is the "starry campion." "Snakeroot," applied here, has no special application for the plant appears to be inert, and "king's cureall" falls for the same reason. "Thermon" appears in the books, but we have found no explanation to accompany it.

A common garden plant of little beauty, "S. armeria," illustrates the way in which the common people may load a species with trivial names. This is the "sweet william catchfly," "garden catchfly," and "mock sweet william." It is also "bunch pink," "dwarf pink," "old maid's pink," and "mice pink." "Limewort" indicates a supposed preference for lime in the soil. "Pretty Susan" appears to be akin to "pretty Nancy," the latter simply "none-so-pretty" reversed and mispronounced. It remains for *S. latifolia* to produce the greatest number of absurd and nonsensical terms as witness "cow-paps," "cow-bell," "bull-rattle," "rattle-bags," "devil's rattle-box," "snappers," "behen," "white behen," "bird's eggs," "sea pink," "maiden pink," "knap-bottle," "frothy poppy," "spattling" and "maiden's

tears." A few of these names seem to have been derived from more familiar species and behen comes from the Arabic *behmen,* meaning a kind of root, but most of them may be allowed to stand as proof of our contention that many common names are simply names given without significance.

SPRING FLOWERS

By Adella Prescott

PEOPLE are funny, else why do they rave, not by the hour, but by the year, over peonies like haycocks, dahlias like cabbages, with gladiolus (accented syllable changing from year to year) and iris straining every nerve to keep up with the procession, while the dainty little flowers that smile in our faces almost before the snow is gone, receive scant attention or none at all. Personally I admire the "giganteums" one and all, but I *love* the cheerful little blossoms that appear so quickly after two or three warm March or April days.

In my garden, snowdrops are the first to appear, promptly followed by crocus with bloodroot and hepaticas hurrying to catch up. Gay as the crocuses are—perhaps because they are gay—they do not seem in harmony with their contemporaneous wildings, so I give them a corner by themselves, but snowdrops and hepaticas hobnob quite sociably at the end of the porch.

These first warm days set me longing for the woods and when I sally forth I take a basket and trowel with me that I may bring home the choice hepaticas—those that are more deeply blued or that are a little more rosy than the common run of nature's mill. There seems to be no rule for the coloring of hepaticas. No two are quite alike and tints, rather than colors, seem to be the prevailing

style; so to find one really blue or noticeably pink smacks a little of adventure at this season of the year, however commonplace it might seem later. I know that conservationists will disapprove the trowel and I know that wild flowers can be raised from seed, but we are too near the city to make conservation over practical and it is a long distance to maturity by way of the seed-bed, with the result doubtful when the goal is reached; so the trowel is always tucked in.

And the small adventures that attend the quests are not the least of their charm. One day I went with a friend to a ravine where specially fine hepaticas and trilliums were said to be found. To reach it we had to cross a wide shallow brook—easily enough done at ordinary times but now the stream was swollen by melting snows, making the crossing difficult.

Neither of us are over-fastidious when on a tramp, still we prefer dry feet and so, since there was an abundance of stones near at hand we decided to build a bridge. Unfortunately we made the mistake of placing our material as fast as it was gathered and soon found we were building a dam instead of a bridge and that the water was rising more rapidly than the structure. Then we made a hasty crossing and we had done our work so well that only one stone slipped, but the water was just as wet and a good deal deeper than it was before the improvement began. Now what has a prosaic seed-bed to offer in place of an hour like this?

Hepaticas are very cosmopolitan in their choice of residence, being equally at home on a shady hillside or in a sunny hollow—never growing coarse or looking puny whatever may be the conditions of their growth. Attractive as they are, the spring beauties that come a few days later are almost more charming and the fresh green mosses, some

crisply erect and others with the softness of velvet, are a lovely background for the dainty pink and white blossoms.

And the fiddle-heads that are pushing up in the moist hollows; the green points that pierce the fibrous mold, here and there (perhaps they are moccasin flowers), and all the other signs that make a walk in the woods so delightful, raise anew the question why men reserve their enthusiasms for the biggest and reddest and costliest when so much beauty lies close at hand without money and without price.

PRESERVE OUR ROADSIDE BEAUTY

DURING the months of July and August, I had occasion to move about a good deal on the improved highways in this part of the world, and in doing so have discovered the most determined and persistent enemy of the wild-flowers. It is not, as many suppose, the denizen of the city out for a holiday, but the legal representative of the people, out with mowing machine and scythe.

The highway commissioners have no great reputation for botanical knowledge and a smoothly barbered roadside paralleled by two neat lines of barbed-wire fence undoubtedly looks better to them than any number of blossoming plants. It is neat and has a thoroughly dressed-up appearance, like a city street. In consequence, one may travel across all the States of the Middle West without seeing much of the native flora—if he sticks to the main highways. One day, recently, I traveled eighty miles in search of that common plant, the yellow daisy or brown-eyed Susan, without finding a plant. All had been cut down by the merciless savage with a scythe. Next day, in the same region I turned down a rough and unfrequented by-road where the wild things grew so near the wheel track that they brushed the car as it passed, and there were the yellow daisies in abundance, and, with them, a host of other prairie flowers that are making a last stand in such remote places.

Our prairies offer such great inducement to the farmer that most of the arable land is now under the plow, and there are few fence-corners and thickets in which flowers may find sanctuary. Not long ago, they did fairly well along country roadsides and railroad rights of way, but all this is rapidly changing. From road to bordering fence-line the plants are being mowed and all the beauty of the wayside is departing. Things have actually gotten to such a pass that it is proposed to plant the waysides with florists flowers derived from Old World sources, while all we need to make our thoroughfares beautiful is to let the natives that now grow there continue to do so.

If it is regarded as little short of a crime to pick the wildflowers on private lands, why should it not be equally reprehensible to cut them down along the roadsides? Picking violets in May is frowned upon, but cutting coneflowers in August, or asters and gentians in September, is considered praiseworthy. To be sure our roadsides must not be left to grow up to a wilderness of weeds, but exterminating ragweed, thistles, dock, wild lettuce and the like is quite a different thing from destroying goldenrods, sunflowers, ironweeds, bonesets, blazing stars, compass-plants, rudbeckias, coreopsis, and a host of others. Moreover, if any planting of the waysides is tolerated, why not encourage the growth of the native species instead of dragging in the plants of foreign lands?

It would be a very easy matter to mark the colonies of showy wildflowers along any road or railway, and instruct the mower to spare these in his annual foray. The clubs interested in protecting the wildflowers would thus find right at home a practical way of making their services useful, their influence felt and at the same time extend the interest in the preservation of plant life. Is it possible that we, as a nation prefer to talk about the sanctity of plant life rather than do something to protect it?—*Willard N. Clute, in the Wildflower.*

THE WALL-FLOWER

By Lucina H. Lombard

At Limerick, Maine, beside a brawling brook, grows a colony of wallflowers (*Erysimum cheiranthoides*). The plant is sufficiently pretty to attract comment, though commonly classed as a weed. It is about two feet high, branched, with long racemes of small yellow flowers. The four petals are arranged in the form of a Maltese cross which characteristic gives the family the Latin name of cruciferae or cross-bearers. Though not common enough in Maine to be troublesome, in Ontario it is "abundant on farms and not at all likely to be growing scarcer" according to the experience of the Dominion Botanist, Herbert Groh.

Our Eastern species is insignificant beside those of the West and Middle West. There is a lemon-colored form with a pleasing fragrance on the higher mountains but the wallflower of the Pacific Coast is light cream color and lacks fragrance. *Erysimum asperum*, while principally a Western plant, has been reported from Newfoundland and from Mingan island (Quebec). This king of the wallflowers is of an orange color with occasional touches of red. It is an inhabitant of mountain slopes and plains as far east as Ohio. The sturdy flower-stalks, from one to two feet high, are crowned with dense clusters of pleasingly scented blossoms that glow like balls of crystallized sunshine. Thoughtless picking of this handsome and once-abundant flower is making it increasingly rare.

In Europe the the true wallflower of the poets, the *Cheiranthus* of our gardens, has a fashion of taking root in the crannies of old walls where they send forth their rich yellow and purplish blossoms; hence the name wallflower.

THE INDIAN PIPE

By SAMUEL B. PRIEST

THERE is a plant, found in the forests of the eastern part of the country which all books on botany label common. The plant referred to is the Indian Pipe. Common it may be from the viewpoint of distribution, but common it certainly is not when considered from any other angle.

Straight, leafless and colorless, its single nodding flower at the top of its single stem, it presents a most wierd appearance when stumbled upon in some deep, dark wood. Once seen, the reason it is sometimes named "Corpse Plant" is apparent and unearthly as this plant appears in life, its behavior after being plucked is still more startling, for in a short time the waxy, white color changes to a deathly black.

Its color, or rather lack of color, immediately brands it for what it is, a parasite. The plant springs from a tangle of rootlets or fastens itself upon the root of some living or dead tree and so gets its nourishment, but though it is parasitic it must be said in its favor that it does no apparent harm to the tree on which it feeds.

Considering the uncommon appearance of the Indian Pipe it seems strange to the writer that its peculiarities should not be made note of in its scientific name. But such is not the case. *Monotropa Uniflora* simply means "single turned," a reference to the turned down flower, and it is also this turning down of the flower that causes the resemblance to a pipe and is responsible for its common name.

A brief botanical description of the plant is in order and that given by "Gray" should suffice. "Common Indian Pipe or Corpse Plant, in rich woods, smooth, waxy-white all over, three to six inches high, with one rather large nodding

flower of five petals and ten stamens." The entire plant is colorless and in place of green leaves has short colorless bracts.

From the foregoing description it will be realized, even by those who have never seen it, that the Indian Pipe is a most uncommon plant and realizing its unusualness it will be readily understood why many legends have grown up about it. Many of these have to do with its marvelous healing powers. It is a shame that more concrete information cannot be given about these legends but it seems impossible. The writer has examined dozens of books on botany but at the best all that can be found is a meager sentence here and there. This is quite disappointing when such stories must lie behind the few words given.

It is known, however, that the Indians used the plant to make a lotion that was used for the purpose of strengthening the eyes. No doubt there could be found even at the present day people of our own backwoods who still cling to some such ideas. It also seems that the Indian Pipe has been called by some "Cancer Root." This is due to its having been confused with another unusual plant, "Beech Drops" or "Cancer Root." This plant was once widely used as a cure for cancer and the Indian Pipe has also been used for the same purpose.

WHAT IS A COMMON NAME?

By DONALD C. PEATTIE

IN the Spring number of the *American Botanist* appeared an article called "The Romance of Oconee Bells." Curious to know what this plant might be, I read, and found it none other than my old friend *Shortia galacifolia*. It was startling in the first place to learn from this article that *Shortia* was a member "of the heath family"! To one who

has made a specialty of the natural history of that fascinating little family, the Diapensiaceae, it was distressing to find that its most historic genus had been transferred to the Ericaceae.

Passing by this, which is only a slip and not intentional, there remains the "common" name, "Oconee Bells" which was certainly artificed with malice aforethought. So far as I can make out "Oconee Bells" dates back no earlier than the publication of "Standardized Plant Names," the poorest book in the world to take as a standard. Its authors, in order to please commercial nurserymen, have manufactured a common name for every plant that did not individually have one. I have tramped the *Shortia* country in North and South Carolina from end to end, studying all the stations without once encountering the name "Oconee Bells," even on the thickety banks of the yellow Oconee itself! All the mountaineers call it Shortia, just as readily as they speak of Rhododendron. Both are botanical names, latinized from English and Greek respectively, but they are now really *common* names. "Oconee Bells" like many other names is common only in books.

In scientific honesty people like the editors of "Standardized Names" should print a list of *Uncommon* Names, with apologies something like this: "These are names never used anywhere and born in our fertile brains; however, we think they are good and we hope you will use them:"

On the list of *uncommon* names should be placed:

Oconee Bells.
Hyssop-leaved Erigeron.
Aster-like Boltonia.
Tall White Lettuce (for Prenanthes altissima).
Swamp Lousewort.
Long-stalked False Pimpernel.
Intermediate Dogbane.

And so on, ad infinitum. The above are but a few gleanings from Britton and Brown, Gray's Manual, "Standardized Plant Names," and House's "Flora of New York State."

I realize of course that state publications, books intended for the plant trade, and books intended for amateurs who will not learn botanical names, sometimes demand the fabrication of these names. That they are not common names, though, ought to be made clear. Most of the old English names ending in -wort are more common in our manuals than in our daily speech. The meaning of wort, the very pronunciation, is now obsolete in America, and if one tunes one's ears to the talk of country people one generally hears the Anglo-Saxon "wort" replaced by the modern "weed." "Spiderwort" of the books is, in my experience among the people who use common names most, "spider-lily." "Whitlow-wort" is "whitlow grass." "Wort" seems to hold its own chiefly in New England, due either to the early English tradition or to the more widespread book-knowledge of botany prevailing in New England. The classic case of a made-up common name comes from entomology, though. An enthusiast for making up common names, fixed on *Dytiscus confusa*, the title of "Confused Dytiscus." After that the poor *Dytiscus* probably was confused!

[Mr. Peattie overlooks the fact that the Diapensiaceae was once included in the Heath family and is still retained next to the Ericaceae in most systems of classification. As to the manufactured common names, not enough has been said. The list he gives is quite tame alongside of such horrors as "hirsute caltrop," "Judge Daly's sunflower," "Miss Mulford's violet," "Tall cat's foot," "Brainerd's cat's foot," and "Stewardson Brown's Indian turnip," all of which, with many others as bad or worse, are to be found in one of our representative manuals.—*Ed.*]

AMATEURS AND SCIENCE

I THINK that many do not appreciate the great influence that the amateur naturalists and collectors of this and every other country have had upon the general advance in science. I do not think it is an exaggeration to say that were it not for the amateurs the progress of systematic science would be practically stopped and the professional scientist would be without the data upon which he relies as the basis of his expert theories and opinions. I think that it can be truly said that three-fourths of the new species of animals and plants that have been described in this country at least have been discovered by amateur collectors, and the same proposition holds good in regard to a very large proportion of the facts in regard to distribution of the various species in the different states, without which all generalization on that subject would be without an adequate basis.

I do not know in detail how it is in other branches of science, but in the one that I am more familiar with the number of professional experts, to whom we are indebted for the greater theories of classification and distribution, can be counted on the fingers of one hand, but the facts upon and from which they work have been very largely furnished by the amateur.

If this is true, it would seem to be clear that it is of great importance to the scientific progress in this country that there would be a large class of such amateur workers who should act as "feeders" to the great museums and to the professional scientists who have them in charge. Just think what it would be for the advancement of the knowledge of the fauna and flora of our state if we had even one amateur collector in each of the counties who should annually turn into the State Survey the result of his individual work in his own neighborhood.

I am very strongly in favor of expeditions, but as every one, who has had experience with them, knows every expedition is more or less of a gamble in regard to the results. The professional naturalist is tied up during the school year with his professional duties. During the summer he takes a month or six weeks, or two months perhaps, at the most, for work in the field. He preferably desires to get into some region that has never been worked before. It is strange to him, as it is to all others, so far as its scientific aspects are concerned, and so he makes a stab in the dark, as it were, as to where he should go. He may hit it and he may not. If he does not, the results of his time and trouble may practically amount to very little.

Then, again, such a professional naturalist, and such an expedition in the summer, loses the spring flowers, the spring insects, the spring migration of the birds, and in the same way he loses them all in the fall. The result of such work is therefore necessarily scattered and uncertain. A rainy season or a dry season may ruin any expedition, and so far as a complete knowledge of the district covered is concerned is necessarily imperfect.

As contrasted with that, compare the amateur, who is on the ground all the year around, who, in gradually increased circles from his home, works over, season after season, every foot of the surrounding territory, so that in the end he not only knows the whole region covered by his examinations, but he knows everything that is to be found there and where it is to be found, and it is to him that the occasional occurrence of the rare things is more likely to come than to the man who, without exact knowledge of the region, attempts at haphazard to do the same work in a comparatively limited time.—*Bryant Walker.*

NOTE *and* COMMENT

CLOSED GENTIAN.—*Gentiana Andrewsii* is no more—if you believe the name-tinkers. For nearly a hundred years the closed gentian has borne the name given it by Grisebach although botanists were well aware that an eccentric botanist of St. Louis had called it *G. clausa* two years earlier. The question is, why should we make a change at this late date? To the technical botanist, changing the names of plants has become a sort of game. It can be played in the library and herbarium with a few musty, dusty, books and does not require that assiduous effort to discover new facts that characterizes out-of-doors botany. Moreover, any time the game gets stale, it may be renewed and begun all over again by changing the rules or adopting a new "Code." The person who deals with real plants cares not what names they are called so long as the names are stable, but when, as in many cases nowadays, the common names are actually more certain than the scientific, it seems about time to pause. Why should the practical man learn and unlearn combinations of latin terms because some young student discovers that an earlier name has been missed in the long-ago? It is difficult, however, to reform one who has once been touched with the name-juggling fever; but the time has gone by when the general public pays much attention to his utterances. Horticulturalists, generally, have discounted his importance, and in their catalogues now use the best known names, regardless of priority. They have money invested in their business and have no time for theories. But suppose we should adopt *Gentiana clausa* as the name of the closed gentian:

has it escaped notice that Small has called the plant *Dasystephana Andrewsii* and may still call it *D. clausa?* The technical botanist ought to be a leader in the practical affairs of botany but all too frequently he is lost in a quagmire of dead and gone names. To follow him is futile.

AERIAL TULIP BULBS.—Additional evidence, if any is needed, to prove that a bulb is essentially a bud and a bud but an embryo branch is found in the behavior of some tulip bulbs in the editor's garden. The plants are Darwin tulips of the variety known as Louis XIV. In these, nearly every plant has produced small bulbs in the axil of each leaf. Had the plants developed branches instead of bulbs we would have had stems with two or three flowers each, such as we observed in another garden during the past spring.

ABERRANT IRISES.—Two unusual sports of the iris have come to notice recently. The first is what is usually known as a spontaneous chimaera in which one half of the flower is lavender and the other white. There are plenty of German irises known in which the petals are white and the sepals lavender, but in the present case the right and left halves of the flower are different in color. The second variation is a four-parted iris in the possession of John Frazer of Lockport, Ill. This latter is not new but has been in the family for a considerable time.

BOTANY IN CHICAGO PARKS.—Mr. Aaron Weber of the Chicago Park System writes that the West Chicago Park Commissioners are anxious to advance the interest in botany and invite flower lovers to make use of the Garfield Park Conservatory and the outdoor flower gardens in the various parks under their charge. The conservatory offers a splendid opportunity to teachers to illustrate the more interesting points of their studies. This may be accomplished by visits to the seven rooms of the conservatory, each laid out with regard to plant families and geographical location.

There are about three thousand species and varieties. In addition there is a range of greenhouses close by where all the plants needed in the system are grown until ready for use. Here may be seen many ways of reproduction, both vegetatively and by seeds. By applying to the West Park Commissioners or to the floral division direct, guides may be secured who will talk to students on the interesting points of the species. There is a catalog guide-book issued which may be had without charge by applying at the conservatory, or it will be mailed for the asking.

BLACK GUM FRUITS EDIBLE.—One of the gardening magazines is authority for the statement that the fruits of the black gum or tupelo (*Nyssa sylvatica*) are edible, being pickled and used like olives. It is said the early French settlers used the fruits in this way. The fruits of both *Nyssa sylvatica* and *N. aquatica* are rather insignificant, being only about half an inch long, but a southern species *N. Ogeche*, has fruits the size of a plum and it is doubtless this species whose fruits are used. The fruits of all the species are acid. It is perhaps needless to observe that the gums are members of the Cornaceae and therefore related to the dogwoods. The fruits of this latter group are, for the most part, nauseous or otherwise repellant, but the fruit of one species, *Cornus mascula*, is edible and sufficiently attractive to be known as the cornelian cherry.

POTENTILLA PUMILA.—Patches of a strange-looking cinquefoil grow on a hill where the common species is very abundant. The leaves are small, deeply toothed, lobed or almost fingered, and ruffled. I supposed it was merely a variety of *Potentilla Canadensis*, but find it has a name of its own—*P. pumila*, dwarf five-finger. The books say it grows "in poor soil" in the Eastern States. It is quite fortunate for us that many a plant prefers that kind of a living. —*Nell McMurray.*

A HARDY WILDFLOWER.—So many of our showy wildflowers require protection to keep them from disappearing that it is a satisfaction to find one quite capable of not only taking care of itself but spreading with the least encouragement. Such a plant is the wild sweet william (*Phlox divaricata*) which, unless persistently weeded out, will spread through the shrubberies and blanket the ground with a mass of bluish-lavender flowers. The plant mentioned is the western variety (*P. d. Laphami*) with round-ended petals, but it is likely that the species which has notched petals would be an equally persistent colonizer. In the same category must also be mentioned at least two of our common violets, *Viola sororia* and *V. papillionacea*. One plant introduced into a garden is sufficient. Its descendants will do the rest. The violet plants are never weeds, though they spread with great rapidity, especially as the gardener dislikes to dig them up.

A PRAIRIE HERON-COLONY.—The great blue heron is usually a retiring species given to frequenting remote streams and ponds and nesting in colonies with others of its kind in some inaccessible swampy woodland. In prairie regions, however, where woodlands are not so abundant, its behaviour is sometimes quite different. In the town of Wheatland, a short distance north of Joliet, a colony of perhaps five hundred birds have nested for a number of years in a man-made forest in the midst of a cultivated area and a considerable distance from water. The woodland is close to a prairie farm-house and covers an acre or more. It was originally planted as a source of fence-posts and fuel and the trees, mostly elm, soft maple and catalpa, have been cut as needed. The trees still standing are approximately a foot in diameter at the base and nearly every one has from one to several of the nests, so insecurely built of coarse twigs that the eggs may often be seen when looking up through them. When the wind blows, the weight of the great birds,

nearly as large as geese, cause the tops of the trees to sway and bend and not infrequently the eggs roll off of their insecure platforms. During the day the male birds pass much of their time in fields near by, in rather close groups looking sadly and unsocially straight ahead for hours without moving. At dawn and dusk, however, they betake themselves to the Desplaines and Dupage rivers or to various marshes and low grounds where they seem to have little difficulty in getting a living.

MULTIPLYING THE WILDFLOWERS.—Those who would retain the wildflowers in our fields and woods devote most of their time and energy to discouraging those who would gather them, but it would seem that fully as much thought ought to be devoted to multiplying the plants, especially since many are commercially valuable and are collected from wild lands. One dealer recently advertised that he had on hand fifty thousand corms of the great white trillium (*T. grandiflorum*). All these have undoubtedly been dug from the forests and the world is therefore the worse off by fifty thousand blossoms every spring. Since those who gather this species usually collect leaves as well as flowers, a single flower-gathering excursion will greatly weaken, if it does not destroy, an entire colony. It is probable, however, that trilliums may be multiplied like other plants, though we seem to know very little about how to go about it. It has been reported that the underground parts may be divided like those of the peony and rhubarb and made into separate plants. Nobody seems to know how long it takes to produce blooming sized trilliums from seeds. Nearly all our cultivated herbaceous species may be brought to blooming size in a single season, that is, they bloom the next spring after they are planted, but several of our most cherished wildflowers seem to require much longer. Just how much longer, several of our scientists have set themselves out to ascertain.

FROST FLOWERS.—While the classic example of ice-ribbons formed by plants is found in the dittany (*Cunila origanoides*) there are, as was intimated in a recent issue of this magazine, a number of other plants that show the phenomenon. Thistles, heliotrope, a species of *Pluchea*, and *Helianthemum Canadense* have been recorded in this connection and Mr. Len Stephenson writes that he has found the frost-flowers on goldenrod, wood sunflower and occasionally on grasses. Mr. W. A. Bridwell has sent us a plant from Texas which he reports has much finer ice-crystals than even *Cunila*. The local name is "ice-weed" but until it blossoms its identity is likely to be concealed, though it is evidently some kind of a Composite.

COMMON NAMES OF GALINSOGA.—Harry G. Wolfgang suggests "pest-weed" as a good common name for the omnipresent *Galinsoga parviflora*. The plant appears to have acquired still another name in the vernacular, for Miss Nell McMurray observes "*Galinsoga parviflora* is never welcome in our garden, hence it never stays long. Some of the neighbors tell me its name is "Devil's buckwheat." This is the first time I ever heard of a common name for this persistent weed.

SYNTHETIC MANURE.—The present age is so accustomed to the substitution of synthetic products for those produced naturally that the suggestion of synthetic manure is lacking in surprise. Since the advent of the automobile and the tractor, the old standby of the farmer, stable manure, is becoming increasingly scarce. This would not be a matter of apprehension if chemical fertilizers would take the place of organic waste from the stables, but these lack the bacteria necessary to fertile soil and they do not produce the humus which aids in warming, and lightening the soil and retaining the moisture. Recently it occurred to somebody that the bacteria might be added directly to piles of

straw, weeds, and the like, and thus provide a product that will be quite equal to anything now used. All that seems to be needed is to add the materials that the bacteria need in their business. It is reported that the proper material has now been discovered. All that is necessary is to sprinkle a layer of weeds or straw with the material, then add another layer and thus build up a pile as high as desired. This is said to turn quickly to a substance that is equal to stable manure and scarcely to be distingished from it. The material used for this purpose is a proprietary article and may or may not do all that its sponsors say it will. After the Experiment Stations have tried it out, we are likely to hear more about it, if it is valuable.

DOUBLE ADDER'S-TONGUES.—Mr. Vance Courtright recently sent us bulbs and flowers of a double form of the white dog-tooth violet or adder's-tongue (*Erythronium albidum*) which he discovered near Shelbyville, Illinois. He reports a colony of about an acre in extent in which the flowers are completely double, in some cases with as many as twenty-four petals. Not only have all the essential organs turned to petals, but additional petals have appeared also. The ground in which the plants were growing is a hard black soil with little or no accumulation of leaf-mold. Several if not all the species of *Erythronium* have the curious habit of sending out slender runners or "sinkers" which penetrate deep into the soil and form bulbs at their tips. The next season these newly formed bulbs send out new sinkers and this continues until the bulbs get deep enough in the soil to bloom—in the present instance, more than ten inches deep. When sufficient depth is attained the bulbs commonly cease producing runners but since each of the younger bulbs produce several sinkers annually, a seedling starting on the surface may become quite a colony before it grows up or, rather, *down* to bloom-

ing size. It is apparent that the entire colony found by Mr. Courtright might have been produced from a single aberrant individual though this would be hard to prove.

SURPLUS APPLES.—According to a bulletin from the U. S. Department of Agriculture, there were held in cold storage in this country on May first, of this year, 619,000 barrels, 2,779,000 boxes and 328,000 bushel baskets of apples. This is approximately five million bushels of apples, an amount greatly in excess of the amount in storage at the same date last year. Possibly the failure of the market to absorb all this fruit lies in the fact that the smaller sizes of apples sell in city markets for 40 cents a dozen or, in exceptional cases, three pounds for a quarter. Such prices are commonly higher than the price of oranges which are brought much farther and seems to indicate a manipulation of the market by dealers interested in getting all the traffic will bear. If the farmer got $4 or $5 a bushel for his apples or even half of that, we should likely hear much less about the depression in crop prices. As things stand, the citizen who declines to be mulcted should eat oranges.

BROMCRESOL PURPLE.—One of our readers complains that it is difficult to secure the bromcresol purple used in testing the acidity in soils, and Dr. E. T. Wherry, who knows all about it, says that no other common substance will answer. It is likely that any large chemical company can supply this reagent and the nearest druggist ought to be able to get it. The Wildflower Preservation Society is putting on the market a $2 soil-testing set which contains enough bromcresol purple to make a thousand tests. It may be added that nearly any organic acid seems useful in making the soil acid for growing heathworts and the like. Tannic acid is still regarded as the best, but even oxalic acid in solutions of a quarter of one per-cent has been used with success.

AN ABNORMAL STRAWBERRY.—A further confirmation of the idea that a flower or flower-cluster is merely a transformed branch is furnished by a strawberry recently brought to our notice in which the berry—really a ripened receptacle with the carpels borne on its surface—has an entire new strawberry plant with six small leaves growing from its apex. It strongly reminds one of the pineapple in which the fruit is crowned with a tuft of leaves, though in the latter case the fruit is composed of the consolidated ovaries of several flowers. A considerable number of flowers are now known in which the ovary, instead of producing seeds has continued growth and produced a flower-cluster.

EDIBLE NIGHTSHADE BERRIES.—Dr. Frank Thone of *Science Service* is another of those who believe the berries of black nightshade are not poisonous. He writes: "I offer further testimony regarding the edibility of the fruits of *Solanum nigrum* if that be necessary. When I was a student at Grinnell College a dozen years ago, Prof. Conard regaled me several times with jam and pies made from this fruit—very good, they were, too. I also used to eat the uncooked fruits of the plants I found in the botanical garden and the fields around the town. Even these never killed me, so far as I know."

RARE PLANTS.—Have you ever seen a specimen of bog-rosemary or russianolive. One of these is related to the labradortea and the boxsandmyrtle but it is seldom mentioned except in the catalogs of certain aberrant nurserymen. In the same lists you may find the mountainwinterberry, the hehuckleberry, the baldhiprose, the falsedragonhead and the devilswalkingstick. No, the printer has not made the mistake of omitting spaces between the words. This is just the way a very large number of plant names are printed in the standard which the nurserymen have

adopted for naming their plants. Such telescoping of names is not sanctioned by any dictionary, by the genius of our language nor by common sense. What the nurserymen expect to gain by such monstrosities is difficult to imagine. It will certainly prejudice cultured people against their whole push for a standard commercial nomenclature as against the names which the botanist recognizes. Must have been a German professor on the names committee!

THE MULLEIN IN EUROPE.—A correspondent writes: "With reference to the article on the mullein in the April issue, I am curious to know whether the author's source of information about the mullein in English gardens is the same as that Neltje Blanchan made use of on page 330 of 'Nature's Garden.' Burroughs may be responsible for the material used by both writers. I saw the thick-leaved mullein in full blossom at Kew last summer—two and perhaps three species, none of which was *Verbascum thapsus* and each was superior to our common mullein. Why anyone should prefer *thapsus* to the species I saw I can not understand. Maybe it's a fib about the English using 'our' common mullein as a garden decoration. I am sorry I did not copy the specific names when I was at Kew." [With our correspondent, we have always found it hard to believe that our common species of mullein is cultivated in England, but no less a scientist than Dr. L. H. Bailey in "Cyclopedia of Horticulture" says: "Considering the fact that the familiar mullein is everywhere known and despised in America, the popularity of the genus in English wild gardens is highly surprising. * * * The English farmer has no dread of the mullein. The mullein is actually a favorite border plant in England, especially for the back row and for shrubberies. One connoisseur after growing many kinds of *Verbascum* discarded all except the common species. The plants probably came from England, certainly

from Europe, but not long ago it was sold in England under the name of 'American Velvet Plant.' The 'soldierly mullein' has often been praised by American writers for its sturdy habit and resistance to the wintry winds, and even a mullein has its poetic moment for the young rosette of leaves in the early morning is undeniably beautiful." The species most commonly grown in American gardens are *V. Olympicum* from Greece and *V. longifolium* from Southern Europe, the latter usually sold as *V. pannosum*. It is to be hoped that some of our British readers will give us their views on the mullein problem. Do the British fancy our common weed? ED.]

ACIDS IN GERMINATION.—Even when one plants fresh seeds he is never certain that they will come up. The mortality among seedlings, heavy as it is, is no match for the mortality of the seeds themselves. It is very evident that we do not yet understand all the ways of seeds in the soil. For some time correspondents of the farm papers have been insisting that seeds come up better and cuttings strike root quicker, if the soil has been made acid with vinegar—about three tablespoonfuls to a quart of water. Whether this strength has any effect is not certain, but that other acids may sometimes be important in germination is shown by the behavior of that rare plant, *Sphaeralcea remota*. Seeds of this species, if planted in ordinary soil, invariably fail to come up, but it has recently been learned at the University of Chicago that if the seeds are soaked in concentrated sulphuric acid for two hours before planting, they germinate quite promptly. It is quite possible that the failure of other seeds to sprout may be due to similar conditions. The rarity of the *Sphaeralcea* is probably to be explained by the difficulties the seeds encounter in germinating.

SPIDERWORT.—When the cultivator orders spiderwort for his garden, the nurseryman almost invariably sends him *Tradescantia Virginiana.* This is the form of Eastern America, and having been first taken over among the herbaceous perennials, has retained its place. There is, however, a much finer species native to parts of the Middle West. This is *Tradescantia reflexa.* If given a suitable location in the garden it soon forms a clump three feet or more high and produces its large blue flowers all summer. It is, however, a true sun-plant and never comes to perfection unless it receives the rays of the morning sun. Indeed, the flowers scarcely open except in sunlight and in any event close before evening. In color the blossoms rival those of the perennial flax though somewhat darker in hue. Like the flax, also, the flowers last but a day, but there is a steady succession of new flowers for a long time.

POLYPETALOUS PENTSTEMONS.—As everybody knows, the species of *Pentstemon* have sympetalous, two-lipped flowers. It is interesting to note, therefore, that in the editor's garden a race of *Pentstemon cobaea* has developed with polypetalous flowers. The blossoms appear as if the corollas have been split down to the bases along the lines where the petals naturally join. The effect is bizarre rather than beautiful, but the occurrence is of interest in showing that sympetalous flowers are really composed of petals joined together.

EDITORIAL

As expected, the note in our April issue regarding a plant exchange brought replies from a number of people who are willing to help others get unusual plants. Several interesting things have been offered and it is likely that others will be forthcoming as the season advances. All these will be announced in the October number. It may be said again that this is an altruistic project for the sole purpose of facilitating the exchange of unusual plants. There are no dues or fees of any kind and nobody has to buy anything. If you have seeds or plants of rare or unusual species that you are willing to supply to others, send the particulars to this office. We will list the offerings in this magazine and those who desire them will send you 10 cents for seeds and 25 cents for plants wanted. Only those who have agreed to offer their unusual plants will be given a number or included in the distribution. If you have an unusual plant that pleases you, save the seeds and join the club.

* * *

After ruminating on the situation for some time, it seems to us that botany is not proceeding at a pace commensurate with its importance. The invention of the automobile has enabled the flower-gathering public to fare further afield, a host of Boy Scouts, Campfire Girls, and similar organizations have brought our youth into touch with nature, botany is taught in every high school and nature-study in the grades, and yet in spite of all this, or perhaps because of it, a real interest in plants is not at all general. One may realize this by considering how many people there are in his own town who are enough interested in plants to buy

botanical books or subscribe for a botanical magazine. This lack of interest on the part of the public may at first glance seem of no consequence to the botanist and flower lover, but it probably affects them in more ways than they imagine. For instance, the size of the flower-loving public determines to a great extent what plants and seeds the plantsman keeps in stock and what botanical and gardening books shall be issued. No matter how attractive the manuscript may be, if there are not enough buyers to make a book profitable to the publisher, it is not likely to be issued at all unless the author bears all the expense. The same is true of other botanical publications. Even the gardening magazines find it necessary to include fashions, architecture, culinary matters, and the like in order to keep going. Indeed, both books and magazines on botanical subjects are steadily decreasing in numbers, which indicates that the noble race of botanists and botanizers is doing likewise. It is likely, however, that in every community there are a considerable number of people naturally inclined to the study of plants, but quite unable to get a start by themselves. They do not know what books to select, or where to get help on their puzzling questions, or even where to find interesting plants. Last spring while admiring a fine colony of the violet-colored *Phlox bifida,* in a remote part of Indiana, we were joined by two young men who had come from the direction in which we were travelling. Asked if there were more of the plants along the way, they replied that they had never seen them before. Travelling on, however, we found whole hillsides blue with the plant. All this beauty had passed before their eyes without making the least impression on their brains, and yet, when they found us admiring it, they were quite as interested as anybody. It would seem to be quite worth while for all of us to take the time to interest such people in the plant world. In this connection the writer recalls an amiable elderly botanist in

an eastern State who was so impressed with the pleasures of plant study that he seldom failed to inspire others with some of his enthusiasm. In a region where a full-grown man collecting plants always created a mild sensation, he found many opportunities to describe the objects of his quest. Perhaps he was searching for a mere weed, but his earnestness was so contagious that not infrequently his audience would join him in the search. All along his usual routes of travel, farmers, housewives and even common laborers were waiting for him with some plant or other that had aroused their interest. Anything unusual in the plant line naturally gravitated to him and the whole countryside became tributary to his studies. When more of us become interested in making botany attractive to others, it may again be called, as it originally was, the "Amiable Science."

In response to our recent request, a large number of readers have told us what department of this magazine they like best. One correspondent suggested that we ask readers which part they like the least. It is a good idea. Next time you dispatch a letter in this direction, tell us of your dislikes!

BOOKS AND WRITERS

The Society for the Preservation of New England Plants has changed its name to New England Wildflower Preservation Society." * * * It is our oldest society for protecting the wildflowers and issues useful leaflets designed to inculcate a respect for the unprotected wildings. * * * The *Flower Journal* of LaJolla, Calif., has changed its size again. * * * It is now the official organ of the LaJolla Floral Association. * * * More trouble for the anti-evolutionists! * * * The Science League of America has been organized for the purpose of backing the theory of evolution. * * *

Everybody who is not worried about man's descending from the monkey, should support it. * * * Before we join either side we want somebody to explain to us what difference man's descent makes, anyway. * * * We have seen some pretty well-behaved monkeys. * * * Dr. G. E. Nichols says that all the wildflowers do not need to be protected and has issued a list of 150 in this category. * * * A copy may be had for 15 cents by addressing A. E. Blewitt, Waterbury, Conn. * * * Everyone is in a fair way to know that the narcissus quarantine is on. * * * Bulbs of common varieties that last year sold for $7.50 a hundred are now offered at $12 to $15. * * * All our growers ask is to be protected from foreign competition and they will do the rest. * * * Our government seems to be afraid that beauty may become too cheap. * * * Why make it possible for the common herd to have flowers? * * * The Bureau of Plant Industry of the U. S. Department of Agriculture at Washington wishes to secure data from various parts of the country on the blooming and fruiting of plants with other related matters. * * * All who are willing to help in gathering such data should communicate with the Bureau. * * * Cards are supplied for recording the observations. * * * Philadelphia is not the only part of the country with a sesqui-centennial. * * * This is the 150th anniversary of the birth of Jonathan Chapman, more commonly known as "Johnny Appleseed." * * * The occasion is being celebrated by a number of organizations in Ohio, Indiana, Michigan and Illinois over which territory the tree-planting Johnny once roamed. * * * Pageants, tree-planting, and other festivals are being held to commemorate his work and to interest the rising generation in tree-planting. * * * Appleseed missed a more certain claim to fame by failing to invent the Jonathan apple. * * * This was named for Jonathan Hasbrouck. * * * The editor of this magazine has written a little booklet of eight short chapters on "Growing Superior Flowers." * * * Readers may secure copies

for ten cents in stamps. * * * A recent number of University of Wyoming publications in Science is devoted to the genera *Thlaspi* and *Oreocarya* by E. B. Payson, and loco-weeds and descriptions of various new species by Aven Nelson. * * * If anybody doubts that there are enough plant diseases to go round, he should get Department Bulletin 1366 from the U. S. Department of Agriculture. * * * This is a check-list of such diseases and, though printed in small type, runs to more than 100 pages. * * * The species are arranged alphabetically and the diseases of each are listed in order under them. * * * Seeds of certain irises are now quoted at ten cents each. * * * This beats the price of ginseng in its palmiest days. * * * The only other seeds that we know of that command such prices are coconuts! * * * If you are interested in irises and poenies, you might like the two lists issued by L. R. Bonnewitz, Van Wert, Ohio. * * * They are sent free. * * * Seems as if there were something else we were going to mention. * * * Oh, yes; the editor was elected President of the Illinois State Academy of Science at its recent annual meeting.

* * *

Of all plant parts, roots usually receive the least attention. We rather take it for granted that the roots will look out for themselves. That there is more in the life-work of these organs than most of us have suspected, is shown in a new book on "Root Development of Field Crops" by John E. Weaver of the University of Nebraska. The author says that often much more than half the plant is underground and obliged to adjust itself to what is not mere dirt but a vast chemical and physical laboratory where reactions of the greatest economic importance are constantly occurring. Roots run much deeper in the soil than is commonly supposed. Ordinary crops reach down from three to five feet and in exceptional cases they may go four times as

deep. The book begins with a chapter on the environment of roots and a full discussion of the texture, composition and micro-organisms in the soil. Two other chapters are devoted to the structure and function of roots, and still another discusses the root-habits of our native wild plants. A dozen additional chapters are devoted to the root habits of our staple crops. It has taken a vast amount of digging, in more than one sense of the word, to secure the data upon which this important work is founded. It is probable that the author has brought together more information about the roots of crop plants than can be found in any other volume, and it will have to be consulted by all interested in the study. It is one of the McGraw-Hill publications in the Agricultural and Botanical Sciences and costs $3. It is published by the McGraw-Hill Company, 370 Seventh Ave., New York.

Two interesting and inexpensive little brochures on forest trees which are issued by forestry associations in conjunction with the Forest Service of the U. S. Department of Agriculture have recently come to our attention. One booklet is entitled "Forest Trees of Connecticut," issued by the Connecticut State Park and Forest Commission, the other "Common Forest Trees of Florida" published by the Florida Forestry Association. In size, format, paper, etc., the books are alike. In each, single pages are devoted to an untechnical description of a species, with good line drawings of leaves, flowers, fruits and other noticeable characteristics. Special attention is given to the means of recognizing the species by the ordinary observer. The books are of a size to fit the pocket and are obviously designed to make identification in the field easy. At present they are distributed free of charge to residents of the States in which they are published, but no provision seems to have been made as yet for others to

obtain them. The books are of such general excellence, however, that we venture the hope that similar books may be made for use in other parts of our country.

The fourth revised edition of a "Key to the Families of Seed Plants" has been issued by Dr. John H. Schaffner, professor of botany in Ohio State University. The author has spent a great deal of time in the study of plant relationships and his key, which runs to about 27 pages should make it easy to trace any flower to its family. There are, however, some stumbling blocks, not apparent to the seasoned botanist but very plain to the beginner, which should be removed. There does not seem to be any necessity, for instance, to confuse the novice with more than two choices. In any key it is highly satisfactory to know that if your specimen does not conform to one of a pair, it must be in harmony with the other. The author's favorite term "ovulary" for ovary is used throughout and such modern terms as monosporangiate, bi-sporangiate, hypanthium, etc. are introduced. There is a good glossary included, something the makers of keys often forget, but which is highly valued by those who are in greatest need of a Key. The book is bound in paper and may be had of the author, Ohio State University, Columbus, Ohio, for 30 cents.

Another Lieferung (No. 186) of the monumental "Handbuch der Biologischen Arbeitsmethoden" has been issued by Urban & Schwarzenberg of Berlin and Vienna. The present number is devoted to the role of the various salts and other substances in the plant and is the work of four specialists. The price is 4.80 Marks.

Plant Geography from the German view-point is outlined in a recent book by August Hayek of the University of Vienna. The volume bears the title of "Allgemeine

Pflanzengeographie" and is published by Gebruder Borntrager of Berlin. After discussing climatic and edaphic factors, the author takes up the different plant associations, beginning with the forest types and running through grassland to desert and water vegetation. Then the major features of the various physiographical provinces are discussed at length. The book is an excellent example of paper and presswork, but the fact that it is printed in German may hamper its circulation on this side of the world. The book is bound in paper and costs 18 Marks.

A mystery lurks under the mandrake, also, whether in May it bears its subtly-fragrant white flower, or in August ripens its apple of mellow gold. A cluster of mandrakes crowning a knoll suggests a grove of dwarf palms sheltering who knows what race of grotesque hop-o'-my-thumbs. If the time be midsummer, we shall probably find in some warm hollow ground the pale waxen pipes of the monotropa. How uncanny is this plant, that has not one drop of green blood in its veins, no fragrance, not a leaf susceptible to the flattering zephyr! A flower brought up in the garden of night, under the rays of a gibbous moon, would look like this; and yet there is sometimes a faint blush on its livid cheek, as though it had spied the dawn a long way off.—ANON.

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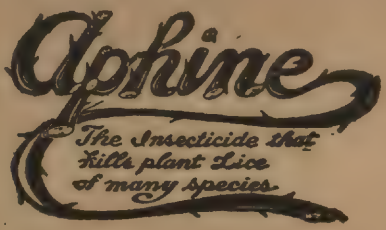

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THE BLAZING STAR—*Liatris spicata*

THE AMERICAN BOTANIST

VOL. XXXII. OCTOBER, 1926. No. 4

The indiscriminate bee
Gathers golden dew
Out of the heart of weed or flower
Of rose or rue.
Do you?
Edith Thompson in The Forum.

THE BLAZING STARS

By WILLARD N. CLUTE

AMONG the more familiar and conspicuous autumn wildflowers of the prairies are several species of the genus *Liatris*, commonly known as "blazing stars" or "button snake-roots," members of the great Composite family Some of the forms are found eastward as far as the Atlantic, but they are often absent from extensive areas where conditions for their growth seem favorable, and seldom, if ever, make the display they do on the prairies. Here they grow in the greatest luxuriance forming colonies so dense that all other plant life in the vicinity is obscured.

The reason for their peculiar distribution seems to be that their center is in our Southern States. Only certain species have been able to push northward along the Atlantic seaboard as far as Massachusetts and in the Mississippi Valley to the Canadian border. One adventurous member of the genus ranges from Saskatchewan to Mexico, but the majority spread less widely.

One of the most widely distributed and familiar species, and therefore the one likeliest to be known to the plant student is *Liatris scariosa*. The most abundant, however,

is probably *Liatris spicata,* illustrated in our frontispiece. This species is fond of wet meadowland and in late August lights up the whole landscape with its close-set spikes of purple flowers on stems more than a yard high. Other species, however, are not so dependent on water and may be found in sandy fields and along waysides.

The common name of blazing star seems appropriately applied to these brilliant flower-heads though they are not at all star-like in shape. The name of button snake-root is often given to various species, apparently without significance, for the plants have no connection with snakes though the flower-heads do have some resemblance to buttons. In some books the generic name is given as *Lacinaria,* but *liatris* is the name that is likely to prevail.

BREADFRUIT

By J. O. Stancliff

THE "hundred breadfruit groves" of Melville's "Typee" are now surrounded and choked by other tall trees, notably the silk-cotton (*Ceiba*). In other valleys they may have given place to cocoanut plantations; and it is certain that their trunks have suffered from the teeth of the white men's horses. Although breadfruit trees require comparatively little attention, that attention must be persistent; and since many thousands of the natives have succumbed to the diseases brought by our civilization, few remain to tend the breadfruit groves in the Marquesas.

In the neighboring valley of Taua I saw abundance of breadfruit, but in Tahauku, island of Hiva-oa, Marquesas group, we had not very much of it. It is true that up a brushy offshoot of the valley there were trees from which the natives returned with small supplies of golden breadfruit, in the season. Once or twice the next-door native brought me a couple of fruits and I baked them in my fire.

but although excellent eating, somewhat like flaky potatoes, they never seemed as substantial as taro.

The nearest thing to breadfruit, in our climate, is another member of its family, the Osage orange. Crossing the Kansas plains from west to east you soon begin to notice under the hedges plenty of fruits variously known to the inhabitants as Osage oranges, bois d'arc apples or hedge balls, according to locality; and the fruits grow larger, as the trees grow larger, if you go southward into Oklahoma. When at their largest there is a striking resemblance to breadfruit, though the Osage orange is much more knobby, and seldom perfectly spherical. Melville in "Typee" uses the word "knobby" in his description of breadfruit, but O'Brien compares the regular, widish, shallow pits of its surface to the indentations of golf balls. But there, if you except the hardness of the unripe fruits, the analogy between breadfruit and golf balls ceases. As to size and shape, Melville's naval simile of "round shot" fits them best. When ripe, and best for cooking and eating,—no one eats them raw as far as I know,—breadfruits are of about the shade known as old gold, and have a certain cobwebby appearance.

Breadfruit leaves are often a half-yard in length, deeply cut into regular rounded lobes, not unlike some oak leaves. They shine like burnished metal in the vivid glare of the equatorial sun. Nevertheless I strongly suspect Melville of romancing when he wrote, "The autumnal tints of our American forests, glorious as they are, sink into nothing in comparison with this tree." It is perfectly true that some of the older leaves vary in tint so that Melville may perhaps be forgiven for his exaggerations in regard to a tree that flourished so magnificently in his Elysian valley of Taipi. The bark of breadfruit, in common with that of the paper-mulberry and the banian, was used to make *tapa*, the paper-cloth of Polynesia.

In Hanaheku, where the constant trade wind blew in through plenteous groves of coconut and breadfruit, the latter made up my menu, eaten green,—baked of course,—with the delicious milk of green coconuts and their tender meat, a few bananas and "coconut steak." Coconut steak is ripe coconut meat, sometimes broiled like steak.

I cannot help wishing that some worthy successor of Mr. Burbank would experiment with breadfruit and discover a way to graft it on the Osage orange, to produce a species which would have the edible properties of the former and the hardiness of the latter. What a terrestrial paradise could then be made of our West, or at least of our Southwest! Where now only prairies, etc., exist, millions of Osage-breadfruit trees might support a large population, who, instead of having to break their backs raising potatoes and similar plebeian vegetables, would have only the small labor of keeping their groves free from brush and high weeds, and fenced from stock!

THE NEED AND MAKING OF LOCAL FLORAS

By Donald C. Peattie

A RECENT number of *The American Botanist* contained a most interesting article by Bryant Walker on "Amateurs and Science." Therein was brought out the fact that the resident amateur possessed advantages far in excess of the itinerant professional for gaining a thorough and accurate knowledge of the local flora or fauna. In my experience the only trouble is that amateurs are either inclined to proscrastinate about making a beginning, or are too diffident about their abilities, having perhaps been intimidated at some time by a "high-hat" professor who has caught them in an error.

The service which an amateur botanist can render by preparing a good local flora is really not small; it is aston-

ishing how much is *not* known about the exact ranges of plants, their blooming and fruiting dates, their relations to soils, the methods by which they are fertilized and by which their seeds are distributed. All our manuals are barren on these points, as well as on the root system, on seeds, and the local lore and use of plants. One may not be able to find a single species new to one's State, and yet make discoveries of the first importance. Darwin did marvels with the biology of a placid country flora; Gilbert White's work on birds, without containing a single sensational note, is a classic of science and literature and observation.

In the hope of encouraging amateurs, then, I am going to throw out a few suggestions. How to make and keep an herbarium has been frequently told and I shall not tell again what may be read in many books. I would merely suggest that an herbarium must be maintained if you are to lay any claim to scientific attention; a specimen is your only proof. In my amateur days I made the mistake of throwing away flowers after identifying them. I discovered some rarities that I have not been able to find since, but I cannot prove it now! That taught me my lesson.

Beginning at the beginning, which is collecting—few people are able to devote all their time to botanizing, and trips must be made of a holiday. Automobiles are good things for covering the ground, but they make for superficial botany. "Horses are not for botanists," said Rafinesque, before the days of motor cars. The only way in the world to botanize is to walk. One must walk without fear of getting wet or tired or dirty; the best botany is sometimes found in the worst places.

You may well set yourself definite boundaries for floristic explorations, but not at first. Wait till you have sized up various sorts of country in your neighborhood. The best boundaries are perhaps geological or natural ones, but

county boundaries are easier to determine exactly. In any case, be sure that not one year, nor two, will exhaust the possibilities of botanizing, no matter how small the area. A man in Rhode Island recently devoted several years to one square mile, and by this intensive study turned up a number of plants new to the State, which he would certainly have missed in a less concentrated effort.

As for the actual methods of collecting; most writers on the subject give a long list of things that they have found "absolutely indispensible." To my judgment nothing is indispensible but your eyes and your hands. A very simple, cheap, and satisfactory equipment would be: Knife; trowel (tied to wrist); Vasculum or collecting box, painted gray, as white soon looks battered and black absorbs heat.

Of course you can add a *machete*, a leather case for delicate specimens, packets or bottles for seeds, bottles for water plants, a belt-case for trowel. Some people have to collect with a press and ten pounds of blotters; every time they collect a plant they have to unstrap the press and open it up, and while they are inserting the plant, fussing over it and writing down notes about it, you can materially assist them by chasing the other plants and papers that blew away when the press was opened.

I know a botanist who has to have a vasculum made out of copper; some carry guns to shoot flowers and fruits out of high trees (perhaps necessary in a tropical rain-forest); some people are miserable without a forty-pound plate camera and tripod. Take all this equipment, and carry a tent and blanket roll on your back, too, if you want to. But I have collected plants with nothing better than my hands and a workman's lunchbox for a vasculum, and never fared better.

Some people stop and tie a little tag on every specimen; others carry a notebook and make elaborate notes of time

and place. But notebooks fall out of pockets, and data gets lost irretrievably. There is no place for carrying facts so safely as in a trained memory. At night, as each plant is drawn out of the box, it will, to the enthusiastic botanist, recall vividly the place of its collection. Notes should be made on the drying sheet then and there, and thus they will never be lost.

Needless to say it is desirable to collect small plants entire. Herbaria are full of flowers, but weak on fruiting specimens; tree specimens ought to include bark, leaves from sterile as well as flowering shoots, etc.

About the identifying of plants one may always properly feel a little humility and uncertainty. Our books are full of mistakes and omissions, and the best way to identify plants is at an herbarium of some size, with the books to assist you. It is usually not too much to manage one trip a year to the nearest college town or state capital or big university where there are always herbaria. However you need not trust the labels on herbarium specimens too much. One learns a healthy skepticism especially where some active systematist is not keeping the herbarium *au courrant* with modern tendencies.

There are always specialists to assist you, and most of them are very amiable. In sending specimens to a busy man, though, you should count on making the man a present of your specimens, so duplicates should be kept, or at least a careful record of the number of the specimen and the data connected with it. On no account should you send mere scraps of leaves or detached flowers to a serious-minded scientist if you want the days of your youth to be long!

Specimens, as I have implied, should be numbered, actual duplicates (that is, specimens from the same plant or clump of plants), bearing the same number. Plants merely belonging to the same species, but not from the same colony

or individual are not considered duplicates. A card catalogue of specimens is advisable.

In the matter of preparing the text of a local flora so much might be said that I shall write a separate article on it in the future. In conclusion, let me say that the difference between a good amateur and a mere dabbler consists in the care with which he takes specimens and in the books he relies on. Popular "wildflower guides" have their uses, but not in science. The regular botanical manuals are a bit steep and technical in spots, but their language is not really difficult to learn, and specialists will assist you till you become proficient in the difficult families like the grasses and sedges. But do not, like a correspondent of mine, say:

"We have all the flowers in ————'s '*Guide to Wildflowers*,' except some."

I am sorry to say this man is pretending to write a local flora!

HIGH-BUSH CRANBERRIES

DID you ever taste the fruit of the high-bush cranberry? If you did, and you had the common experience, you found it exceedingly bitter and nauseating and probably wondered how anybody could dignify by the name of cranberry anything with a taste like that. There is, however, a form of this plant that quite comes up to specifications but plant students have only recently succeeded in distinguishing it.

It seems that the shrub which botanists have been calling high-bush cranberry, encircles the world in the North Temperate zone, but there is a different variety on each side of the earth. Only the American plant has fruits with the real cranberry flavor. The European form is bitter and worthless. The latter, however, is the shrub usually

planted for ornament. In some way it has managed to so completely take the place of our native form that many people have supposed there was but a single kind.

The bright red berries of the high-bush cranberry remain on the bushes until late in the winter and, in addition to being highly decorative, afford food for the winter birds. Our native variety affords food for human beings as well. In the early history of the country, the fruits were commonly used for pies, sauces and jellies and they are still so used in regions where the true cranberry is rare or absent.

In spring the plants bear large flat clusters of white flowers much like those of the elder in appearance. They have this peculiarity, however: the flowers on the edge of the cluster are several times as large as the others, and are sterile, that is, they lack the stamens and carpels necessary to produce fruits. These larger, imitation flowers, appear to be merely for advertising purposes, making the flower-clusters more conspicuous to the insects. The familiar snowball tree of our gardens is simply a form of the common plant in which all the flowers have become sterile and therefore incapable of producing cranberries of any kind.

Since one form of the plant produces edible fruits as well as flowers most people will prefer to plant it, but they will have to be careful to specify it or they may get the less desirable form. Unfortunately the stock of many nurserymen consists of the European form, only, which is known as *Viburnum opulus*. The desirable kind is the variety *Americanum*.

THE MEANING OF PLANT NAMES—XXVIII

BORAGINACEAE AND OTHERS

By WILLARD N. CLUTE

RANGED in linear sequence in most systems of classification are four plant families which I am moved to blend into a single section of this inquiry into the meaning of plant names. These four are the Polemoniaceae, Hydrophyllaceae, Boraginaceae and Verbenaceae. All are members of the great order Polemoniales to which also belong at least a dozen other plant families. Those selected, however, have a number of traits in common that serve to connect them in the memory of the plant student and warrant their inclusion in a single group.

As is usual with plant families, each of those to be discussed is named for one of its prominent genera; in the present case, from *Polemonium*, the genus of the Greek valerian, *Hydrophyllum*, the water-leaf, *Borago* the borage genus, and *Verbena*, the group name of the vervains.

Though *Polemonium* has given its title to the family, and through it to the order, the members in our flora, at least, are not of great significance. Far more conspicuous are the members of the genus *Phlox* whose generic name meaning flame was anciently applied to certain species of *Lychnis* but later transferred to this typically American group. *Lychnis*, which means a lamp, was thus left to the equally brilliant members of the Pinkworts which now bear it.

Polemonium is recorded as derived from *polemos* the Greek for war, because, according to Pliny, two kings fought for the honor of its discovery. Bailey's latest manual, however, says the name is not satisfactorily explained and we join in the dissatisfaction. It is scarcely a genus to fight

over; besides ancient kings always had plenty of other excuses for going to war. Our only other genus of Phlox-worts is *Gilia*, named for a Spanish botanist who flourished during the latter half of the 18th century.

Hydrophyllum may be translated literally "water-leaf." Wood hazards the guess that in spring the leaves of some species hold water, which seems to me doubtful, but may be accepted until somebody comes forward with a better explanation. *Nemophila*, the name of a typically Western genus, means a lover of the groves, alluding to the usual habitat.

A certain John or Joseph Ellis, naturalist and correspondent of Linnaeus is remembered in the genus *Ellisia*. It would not do to say that his memory is honored by a weed so insignificant. Even this monument is beginning to fade into obscurity for the tendency now is to call the group *Macrocalyx*. This means simply, large calyx, this organ being far the most conspicuous part of the flower. Another Western genus, *Phacelia*, is named for the clusters or fascicles of flowers. The name of the genus *Hydrolea* is another not satisfactorily explained. Part of the name is apparently from the Greek for water. Wood says it is derived from "water and oil," and adds that our species is "a viscid (oily) water plant." More recent botanists have relieved the situation by calling the genus *Nama*, meaning a stream and referring to the habitat.

The Borage Family is the most diversified of the four groups in our region, having no fewer than sixteen genera in some classifications. The name-genus, *Borago* is not a native of our country, but one species is often found as an escape in the North-eastern States. The word is reported to be derived from the Latin *Burra*, meaning rough hair and alluding to the harsh foliage. Another rough genus is that containing the stickseeds and known as *Lappula*, signifying little bur. Doubtless the burdock (*Arctium lappa*)

of the Compositae, stood, in the mind of the namer, for the big burs. Burs, however, are common in this family; they appear, indeed, to be its favorite method of seed distribution. As far as real adhesiveness goes, the burs of *Cynoglossum* are in a class by themselves and might well have been given a rougher title than *Cynoglossum* which means simply a dog's tongue. It is to be understood that the name has reference to the leaves; if the fruits were considered, cat's tongue would be more appropriate. *Asperugo* is another name that means rough and its species are all up to specifications.

Amsinckia and *Mertensia* are genera dedicated to ancient botanists, namely, Wilhelm Amsinck and Franz Karl Mertens. Both were Germans and Amsinck seems to have mixed politics with his botany for he was Burgomaster of Hamburg and gave important support to the botanical garden in his city.

The generic name *Lycopsis* is translated as "like a wolf," but Wood, who seems to have been an astute student of the classics, say it means wolf and the eye and has reference to the small blue flowers. The name was given by Linnaeus who failed to explain it. *Echium* is also named for an animal. Dioscorides named it for a viper, in allusion, as Wood says, to the spotted stem of some species. In this case, old Dioscorides must have had some other species than ours in mind, for ours lacks a spotted stem and is commonly called blue devil. *Myosotis* means mouse and ear in allusion to the small soft leaves of some species. Perhaps *Onosmodium* should be included in the genera associated with animals. The name means "like the genus *Onosma*" and the latter is translated as "ass-smell."

The hard white, or gray, nutlets of the genus *Lithospermum* are responsible for the generic name which means, literally "stone-seeds." *Symphytum*, the name of the com-

frey, a plant long held in high esteem as medicinal, means appropriately enough "to grow together." Last of the borage wort genera is *Heliotropium* which is well known to be derived from the Greek words for the sun and to turn. But students are by no means agreed as to whether the turning toward the sun is expected of the flowers or flower-clusters, or whether the name was given simply because the plant blooms about midsummer. One fact seems to be certain: the flowers do not invariably face the sun or turn with it.

In the Verbenaceae there are only three genera and few conspicuous species in our flora. *Lippia*, the fog-fruit, is dedicated to one Agostino Lippi, a countryman of Benito's though flourishing much earlier. *Callicarpa* means "beauty fruit," a fine name for that plant of our Southern States with handsome purplish-red fruits. *Verbena*, the name that gives the title to the family, is said to be of obscure derivation. It was the early Latin name for any sacred herb. Wood says that the common species, which is still called "simpler's joy," was known to the early Celts as *fer faen*, meaning "to expel stone." From this it is assumed has come the English vervain and the Latin *Verbena*. How much truth there may be in this, it is difficult to say, but it is of course a familiar fact that the Roman verbenae consisted of the leaves and branches of certain herbs used in religious ceremonies. Whether they were always from our rather coarse and homely weed it would be impossible to say. It may be noted, however, that this plant was held in high esteem by the Druids who had special rites for gathering it and that this was in the ancient days before the time of Pliny or any system of naming plants.

NOTE *and* COMMENT

EUSTOMA RUSSELIANUM.—Rev. J. M. Bates, noting that the handsome number of the Gentianaceae whose scientific name heads this paragraph has no common name, suggests that "tulip gentian" or "chalice flower" would be appropriate. He says its shape suggests the tulip and that it stands up like one and opens just enough. He further observes: "It is a thing of beauty in our Nebraska flora, quite as showy as *Gentiana crinita* and more so than *G. Andrewsii,* which is probably our commonest species. It is found only in strongly alkaline soils which means mostly 'bottom' lands here, and on the Platte river, the Loup, and other streams that have wide 'bottoms.' Its color varies from white (albino) to reddish-purple. Its name, *Eustoma,* seems to mean open mouth. It stands up quite stiff and straight as *Andrewsii* does not. *Gentiana puberula* is also rather common in the low places of the sand-hill region, varying from white through straw-color to deep blue. This is very stiff, indicating plenty of silica in solution with its food. It occupies the moister places in a very dry soil. *Menyanthes trifoliata* is a very interesting plant growing in places where it is hard to collect—quaking bogs in Sherry County and a few other localities. I think I was the first one to collect it in Nebraska. As the plant has no resemblance to a bean, the popular names undoubtedly refer to its trifoliate leaves."

SEED STRATIFICATION.—The longer one studies plants, the clearer it becomes that they are far from being perfectly adapted to their surroundings. Although the parent plant may be a very prodigal in the matter of seed production,

the chances seem greatly against many new plantlets getting started in life at all. Plenty of seeds are known that must be planted as soon as ripe or they are not likely to grow at all. The common garden phlox has a seed of this kind. There are others in which the embryo is still undeveloped when the fruit is ripe, and at least one species in which the pollen tubes have not reached the ovules when the fruit falls from the tree. Still others have seed-coats so hard, that though the embryos are ready to grow they are unable to get out of their prisons. The most successful of this latter class are those individuals that happen to be buried under fallen leaves and other rubbish and are thus kept moist while their seed-coats slowly decay. Most of the benefits of fall sowing come from keeping the seeds moist and thus softening the seed-coats. Often the gardener files a hole through the seed-coats to help along the process, but mostly he resorts to stratification. In stratifying seeds they are placed in layers in a shallow box of sand or peat and kept moist by burying the box in a well-drained spot over winter. Some seeds must be stratified for six months before they will grow but the majority require much less time. Various acids are reported to hasten germination also, possibly by eroding the seed-coats. When we understand what goes on in the seed, we may perhaps have a set of directions on each seed-packet telling exactly what treatment to apply to those particular seeds. In general, annuals are easiest to germinate and they are also able to retain their vitality for a long time. With them, when they once get started, it is now or never. The perennials are more deliberate but even here, it is likely that they do best if their seeds are planted as soon as ripe.

RED SQUILLS.—According to the clip-sheet sent out by the U. S. Department of Agriculture, the Bureaus of Biological Survey and Chemistry say a fine rat-poison can be made

from the dried bulbs of red squills, but if the rats have no more knowledge of red squills than the writer of this paragraph has there is no great danger of their lives being terminated by the plant. This is a fine example of the unavailable information that is constantly seeping out of the Department of Agriculture. Undoubtedly some of those Government wights recognize the plant in question by its common name but others know only that it must be some kind of a bulbous plant that is poisonous. How is the farmer and gardener able to make use of such information? If a technical name had been associated with the common name, anybody could have traced it further.

FOOLISH PLANT NAMES.—An Indiana reader remarks concerning the common names of plants: "If you try to apply to a poor plant all the fool names all the ignorami can invent, you are placing an unnecessary burden on plants. For years I have asked people in the field the name of this and that plant and the nonsensical names I never record. It is senseless to do so. You might just as well record what a baby or an imbecile might call a thing." Our subscriber undoubtedly has in mind more of those uncommon common names. But it would require a better man than Solomon to draw an exact line between the foolish and the merely outlandish or local names. Many intelligent people with little or no formal knowledge of botany, though interested in flowers, may call them by names which their friends understand, but which sound silly to the sophisticated student. Names of this character should be recorded when found, for there is no knowing when an inquiry about a plant by this name may be forthcoming. Every effort, however, should be made to fix on a single well-recognized name for every common species and to gain adherents to that. Incidentally it might be well to have a contest to see who can discover the most inane or nonsensical name.

POKEBERRY AS A POT-HERB.—Although the roots of pokeberry (*Phytolacca decandra*) have long been known to be poisonous, the young shoots are harmless and are often used by country people in spring as a pot-herb. It was a surprise, however, to find great quantities of pokeberry shoots being offered for sale in the city markets of Louisville, Kentucky, under the name of poke-weed. It is not likely that this vegetable finds its way to the tables of the well-to-do but that the plant is a food-plant of commercial importance is interesting.

CALIFORNIA COMMENT.—A California reader writes as follows: "The note on mullein interests me as I have often wondered about the American Velvet Plant story. Robinson in his 'English Flower Garden' describes half a dozen good mulleins, giving the palm to *phlomoides* with *Olympicum* a good second. He also mentions eight more species as 'interesting,' one of them being *blattaria*, but has not a word to say for *thapsus*. This, I suppose might be considered negative evidence.

I have just been reading a life of Peter Collinson (John Bartram's patron and long time correspondent). He certainly was of a different kidney from the modern notoriety seekers by way of plant names. When Linnaeus named *Collinsonia* for him he protested and said it ought to be called *Bartramia*, since John had found it and sent it over. By-the-way, in a list of American Plants grown in Collinson's garden near London, is *Cornus Canadensis* which Collinson notes as called Baked Apples and Pears.

I like your article on preserving wayside plants from the scythe. One don't have that sort of trouble in California, for roadside flowers in our long dry seasons are few. Our principal lamentation is directed to the omnipresent subdividers who tear up the face of the earth everywhere and build bungalows on it. Thanks to the efforts of Theodore

Payne, of Los Angeles, a considerable sentiment has been developed for the use of natives in gardens and landscape work. Besides a lot of shrubs a patch of California wildflowers in many gardens has come to be the regular thing, the seed scattered in the autumn and germinating with the first rains. Oddly enough many of these seeds are imported from Germany!"

BUTTERMILK-FED PLANTS.—It used to be commonly believed that the giant pumpkins and squashes exhibited at the county fairs, attained their mammoth proportions through being fed on milk. The scientists, however, proved to their own satisfaction that it could not be done. Several pages of an earlier volume of this magazine were devoted to this subject. But it now seems certain that plants can be fed on buttermilk which, after all, is simply milk with the cream removed and the sugar turned to lactic acid. F. V. Coville who has performed many experiments with acid-loving plants, and who is to be credited with most of the work leading up to the cultivation of the blueberry, trailing arbutus and other heath plants, has recently shown that blueberry seedlings, fed with a single teaspoonful of buttermilk, soon take on a darker green than untreated plants and begin to put out new shoots at a rate that quite outdistances those lacking a buttermilk ration. Application of sweet milk to the soil in which heath-plants were growing, caused them to make remarkable new growth also. This, it is suggested, was due to the souring of the milk very soon after penetrating the soil. Experiments seem to indicate, however, that it is the casein of the milk, rather than the acid that induces the vigorous growth, though when, diluted, had a similar effect. In any event it seems certain that the heaths and probably all other plants that thrive in acid soils may be greatly stimulated by the use of buttermilk or sour milk. More experiments are needed before the matter is settled.

THE WILD CUCUMBER.—One of the most astonishing things about the wild cucumber is its root. Here in Southern California where the vine grows so profusely, blooming and bearing its prickly fruit for many months in the year, the great gnarly root mass sometimes gets plowed up by road-workers, or is exposed in some other way. If one did not know it was the root of a plant he would never guess it to be one. Some of them weigh at least ten pounds, if not more, and would easily fill a half-bushel measure. They look more like small hillocks than the roots of a plant, but from them grow masses of a really beautiful vine that covers the brush of the hillside for yards around. The long racemes of white flowers are also beautiful and fragrant—as fragrant as any California wild flower perhaps, though the fragrance soon leaves them if they are brought into the house. The round, prickly fruits are glossy green in color when they first appear on the vine and add to the decorative effect. The giant tuberous root of the vine appears to live on from year to year if not uprooted. It grows to be of a woody texture, more like the root of a tree, as time goes on. Sometimes the vines that spring from it appear, growing up through the ground a long way from the root. The writer had lived in California a long time and had many times observed the vine before she discovered that they sprang from these immense root masses.—*Delphia Phillips, Balboa, Calif.*

PLANTS AND DROUTH.—There are few parts of the earth so dry that no plants can live in them. When we speak of species that exist with the minimum of water we usually think of cacti, yuccas and other plants of the dry and often arid stretches which we call deserts. But there are deserts nearer home though we seldom think of them as such. A dry cliff, the trunks of trees outside the rain-forest region, a sand-dune, or even a bog in which the water contains

substances that make it difficult for plants to absorb it, may be thought of as deserts. In the regions ordinarily called deserts, few plants become completely dessicated; they simply husband their moisture until it rains again, but in these special forms of desert, the plants often seem to dry up completely, reviving when more moisture is to be had. Among this latter class are many of the mosses, which live on cliffs, walls, bowlders, and tree-trunks, the lichens which often endure a temperature of 150° daily and go long periods without water, and, in some cases, representatives of that moisture-loving race, the ferns. It is naturally the rock-inhabiting ferns that supply the best instances of drouth-resisting species. In the positions in which they grow, they must often be overtaken by extended periods of dry weather. It is not surprising, therefore, to find that some have developed great powers of resistance through ages of trial. Recent investigators, working with that well-known rock fern, *Pellaea atropurpurea*, find that the beginning or gametophyte stage, often known as the prothallium, is able to endure absolute dryness for more than nine months. A few plants were able to resume growth after being left in the greenhouse without water for 138 days and then kept for four months longer in receptacles made absolutely dry by chemical means. It is likely that when we learn more about seedlings, we shall find many, even of flowering plants, that can resume growth after a pretty complete dessication. Several of our grain-plants can be dried up and revived a number of times. One of the remarkable things about it is, that it is the tender seedling or gametophyte stages that are thus resistant.

SPOONWOOD.—The stems of the mountain laurel (*Kalmia latifolia*) are generally so slender that some doubt has been expressed that the common name of "spoonwood" was given to the plant because of the wood having been used in making

spoons. In Peter Kalm's "Travels in North America," however, the author, after whom the plant was named, says under date of November 20, 1748: "The spoon-tree, which never grows to a great height, we saw this day in many places. The Swedes here have called it thus because the Indians who formerly lived in these provinces used to make their spoons and trowels of the wood of this tree. In my cabinet of natural curiosities I have a spoon made of this wood by an Indian who has killed many stags and other animals on the very spot where Philadelphia afterward was built."

DOGWOOD AND THE LUMBERMAN.—We are constantly exhorted to "Save the Dogwoods," without being told for whom we should save them. The lumberman seems most likely to be benefitted by the suggestion. The fact is, the dogwood possesses an unusual combination of useful qualities which makes its wood more highly valued than that of most other species. Other woods have the same properties, such as hardness, fineness of texture, and smoothness when subjected to wear, but few, if any, possess them all to such degree as dogwood. This combination of properties is of special value for shuttles, bobbins, spool heads, golf club heads, infants' shoe lasts, small handles, brush backs, turnpins, mallets, pulleys, and many novelties. Shuttle blocks and shuttles, for which dogwood and persimmon, together with a small quantity of boxwood, are the only woods used at present, stand out in importance far above the other products mentioned. Shuttles are indispensable to the cotton, woolen, and silk mills of the country, representing a capitalization of over $5,000,000,000. Also, there is a constant demand from foreign countries for over half the shuttle blocks manufactured here. The Department of Agriculture recommends that manufacturers try other and more abundant woods as substitutes for dogwood and that the dogwood

be used with as little waste as possible. Meanwhile, the slogan should be revised to run, "Save the Dogwood—for the lumberman!"

BOTANY IN THE SCHOOLS.—A reader in New York writes: "Botany as such is no longer taught in the high schools. All that is taught of plant and animal life comes under the one study of biology. In some lines this gives more knowledge of plant life than was formerly received but ability to identify plants, analyze flowers, etc., is not learned. Much is gained, but much is also lost. Isn't this the cause of the lack of interest of which you write?" In reply to this it may be said that it is probable that the schools, instead of making plant lovers, do much to discourage and disgust the beginner. If anybody can make a subject distasteful it is the school teacher. The latter is nearly always more interested in maintaining a hard and formal discipline than in inculcating an interest in the subject or inspiring a love for study. Botanists and botanizers are, like the poets, born and not made. The writer who is acquainted with a fairly extensive circle of plant students cannot recall even one honest-to-goodness botanist who became interested in plants through the schools. The product of the schools is a botany teacher, not a botanist.

PEONY SEEDLINGS.—When the nurseryman charges $10, $25 or even $100 for a new peony plant containing only three buds, the price seems exorbitant—but not when one knows how new peonies are produced. To begin with, peony seeds are rare because fine peony plants seldom produce seeds. Their flowers are double and the seed-forming parts have been changed to petals. But even if seeds are produced, these will not form plants like their parents. One may grow a hundred seedlings to maturity and not get a single good plant in the lot. Seeds, however, must be depended

on for getting new forms of the flowers and so are always worth planting. At their best, peonies are of exceedingly slow growth. It may take as long as ten years to produce a full-sized plant and the only way a desirable form can be multiplied is by divisions of the root. A really good peony, therefore, has cost the originator much time and money and is probably worth the price charged for it. At present there does not seem to be any way of speeding up the growth of the seedlings. For a whole year after the seeds are planted, they lie in the soil and give no hint that they are alive. The second season a single leaf with three or four divisions appears above the soil and then one may know that his poeny crop is on the way. What goes on beneath the soil is about as follows: When peony seeds are ripe they are smooth, brown, about the size of a pea, and more or less angular from being pressed by adjacent seeds in the pod. The seed-coats and the matter within are hard and the latter has a waxy appearance. At the end nearest the point where the seed was attached is a tiny yellow-white object half the size of a pin-head. This is the young plant. All the rest of the seed is plant-food or endosperm. The first season after the seeds are planted the seed-coats and endosperm swell and a single root which may become as much as six inches long, pushes downward in the soil, but no sign appears above ground. Within the seed the young plant begins to enlarge until its two seed-leaves or cotyledons are as long as the seed. One might say, therefore, that the young plant begins to grow the first season but spends its first year within the seed instead of above ground. In autumn the top of the root thickens into a white object half the size of a grain of rice and this becomes the stem from which the aerial leaves spring in subsequent seasons. At the end of the second season the stem may be an inch long and as thick as a straw; at the end of the

third, it is oblong and half the size of one's little finger; at the end of the fourth, it really begins to look like a peony plant and thereafter one waits with more or less patience for a year or two longer until the plant blooms. Even then the experiment is not ended, for the flowers are usually single at first and do not arrive at the much-prized double forms until fully mature.

RARE PLANT EXCHANGE.—Some time ago, there was some discussion in this magazine about the rarity of white strawberries. Members of the Plant Exchange who would like specimens may now obtain them from Charles C. Deam, State Forester of Indiana, Bluffton, Ind. In ordering plants or seeds offered, members should mention their exchange number and enclose 25 cents for plants or 10 cents for seeds. Mr. H. A. Rankin, Hallsboro, N. Car., offers seeds or plants in season of the rare Venus' fly-trap found only in the sour savannas of North Carolina. Mr. Leslie L. Haskins, 309 Lyon St., Albany, Ore., offers *Asarum caudatum, Micromeria chamissonis, Synthyris rotundifolia* and other seeds and plants of the Willamette Valley. Miss Adella Prescott, New Hartford, N. Y., offers seeds of wild ginger, Oswego tea, bloodroot, and cardinal flower. The editor of this magazine will shortly issue a list of seeds of interesting plants which will be offered to members. It is hoped that other members of the exchange will be on the watch for seeds of other desirable plants. The wild species are especially wanted. Other plant lovers who wish to join the exchange should forward their names to the editor of *American Botanist*. There are no dues or fees. All that is required is that you offer such rare or interesting plants as you can spare when you can spare them.

PHLOX ARGILLACEA.—The silvery-lavender phlox (*Phlox argillacea*) is a species native to the sterile soils about the

head of Lake Michigan. Under garden conditions its thriftiness varies with the soil, the plants ranging from clumps with half a dozen stems to those with more than fifty. One reader reports more than seventy stems from a single plant. The behavior of this species, coupled with the fact that it is an inhabitant of the sandy wastes suggests that it is another of the plants that thrive in acid soils. It is rarely if ever found on limestone. Growers of this plant would do well to try applications of aluminum sulphate or other means of making the soil acid with a view to producing larger specimens.

TINKER'S-WEED.—Howard Whitney has kindly supplied the information that tinker's-weed (*Triosteum perfoliatum*) was named for a certain Dr. Tinker who practiced medicine in early New England and probably included this plant in his materia medica. As is well known, the plant has some repute as a curative agent, being called by such other names as wild ipecac, feverwort, and horse gentian. In spite of the fact that several books speak of the seeds as being used for coffee by the early settlers, we are still unconvinced. "Pimbina," about which inquiry was made in connection with the high-bush cranberry (*Viburnum opulus Americanum*) proves to be, as suggested, the Indian name for the plant, but is likely to be spelled pembina in the Dictionaries.

CORN PLANT NEEDS.—Government officials assert that it is possible to discover what the corn plant needs by a test of the plant itself. The test is made during the latter part of the growing season, after the ears are well developed. A stalk is cut and split open lengthwise. A solution of sulphuric acid containing a few drops of what the chemists call "diphenylamine" is applied to the cut surface of the stalk. If the plant has had sufficient nitrogen the tissues will turn

blue. If the plant has been starved for this food the tissues will be of a yellow-green color. A lack of potassium in the soil may be detected by examining the tissues at the nodes or joints of the stalk. If the tissues turn red when a solution of potassium thiocyanate is applied the soil needs potassium. The amount of red color indicates the relative amount available. In soils found to be acid in reaction, undersized or stunted plants indicate the need of phosphates, providing climatic conditions were normal during the season. On such soils both lime and phosphates can be profitably used.

NARCISSUS QUARANTINES.—When the Federal Horticultural Board placed a quarantine on foreign-grown narcissi, thereby depriving us of a cheap supply of beautiful flowers, it did so on the plea that to admit narcissus bulbs was dangerous because they might bring with them two pests likely to damage American crops. These pests, however, are already in the United States and it has been deemed necessary to establish another quarantine to prevent their further spread. This new quarantine provides that bulbs moved from State to State must be inspected and disinfected under the direction of a qualified inspector. Here is where the Federal Horticultural Board made a bad break, for if American-grown bulbs can be rendered harmless by disinfection, the foreign bulbs can be, also. In some cases the bulbs are plunged into hot water for a short time and in others disinfected wih chemicals. Thus the last excuse for a quarantine against foreign bulbs breaks down, and to maintain it further is, in effect, what many people have long surmised, simply a protection for American bulb-growers, in lieu of a tariff. And this has resulted, as usual, in greatly enhanced prices. Remove the quarantine and bulbs would again be plentiful and cheap. Nor

would this ruin the growers in America. If onions can be raised at a profit at $3 a bushel, narcissus bulbs at 15 cents each ought to keep the growers from starvation.

DOGWOODS.—The father of all the dogwoods, at least the species that seem to have given its name to all the rest, is the European dogwood (*Cornus sanguinea.*) Some of the other species seem to have been named for this one because they resemble it in various ways or have been put to the same uses. Among such species are the spindle tree (*Euonymus Europaeus*), the elder (*Sambucus nigra*), the guelder rose (*Viburnum opulus*), and even the common alder. On this side of the world the name of dogwood is applied to all species in the genus *Cornus*, to the striped maple (*Acer Pennsylvanicum*), the poison sumach (*Rhus vernix*), the choke berry (*Aronia nigra*), the button-bush (*Cephalanthus occidentalis*) and the mountain ash. Other plants called dogwoods are found in Australia and Tasmania. It has been conjectured that dogwood is a corruption of dag-wood equivalent to prick-wood and skewer-wood in reference to its use by butchers for holding meat together. It is likely that other species have been so called because of their worthless qualities while the old herbalist, Gerarde is responsible for the statement that the plants were called dogwoods because a decoction of their leaves was used for washing dogs.

EDITORIAL

This magazine has been increased in size so many times that we have lost count, but the patronage during the past few years has enabled us to announce a further and larger increase.

In January the magazine will appear in an entirely new format with one-third more pages. This arrangement, we anticipate, will give us space for printing a number of longer papers that have been accumulating, but there is to be no change in the general contents of the magazine. We expect, therefore, that all our present subscribers will renew, if only to see what the larger magazine will look like.

Along with this increase in size will go a slight increase in the price. After the present year fifty cents will be added to all classes of subscriptions. The increased price, however, will not affect present subscribers for a year, at least, provided they renew before the first of January, for until that time, we shall accept subscriptions at the usual rates, standing the extra cost ourselves, and all bills for next year have been made out on that basis. Moreover, subscribers may pay at the present *annual* rate for as many years in advance as they choose. This is a good time to lay up treasures for future use, especially as we offer three years subscription for $5. Many of our subscribers now pay for several years in advance when they renew, and others may wish to do so. Those whose subscriptions are paid in advance will receive the magazine for the time originally paid for, without increase in price. If, after subscribing, any reader wishes to discontinue before the time paid for is up, he will have the unused part of his

subscription promptly refunded. You do not take a chance in ordering in advance. Those who expect to be subscribers for more than one year are invited to use the "permanent" list at reduced rates.

We have hesitated for a long time to increase the price of the magazine, hoping that the exceedingly high cost of printing would return to a lower level, but the present inflation shows no sign of receding and we have no recourse but to follow the example set by the other botanical publications. As it is, even with the advanced prices, our magazine is still cheaper, page for page, than any other in its class. Where can one get a book of botanical essays for $2, or more than 250 pages of fresh items about plants for the same sum? If this magazine is not worth three trips to the movies a year it ought not to be published.

The printing of a larger magazine will require a much larger number of botanical articles and we cannot too strongly urge our readers to contribute to its pages. When we reflect that an immense amount of original observations about plants goes unpublished because the observer fails to record them, we feel that a lot of good botanists have been defrauded. Only a certain amount of interesting botanical material is produced each year and everybody will have to help in making the magazine if they do not wish the editor to do it all. We have subscribers in such remote and widely separated regions as Petrograd, Jerusalem, Pretoria, India, Cuzco, Honolulu, Cuba, Japan, Alaska, Mexico, and the Canal Zone, not to speak of those in practically every State in the Union, Canada, and most European countries. If even a small number of these, in the spirit of kindliness that animates all good botanists and botanizers, should contribute their interesting experiences with plants, we would be able to issue a periodical of most unusual value. A great many people think that to be in-

teresting they must write of the unusual, when the fact is they must be simply original and write of the plants with which they are most familiar. What does the general reader know of the plants of the Arizona deserts, of the tropical rain-forest, of the vegetation of veldt, steppe, and tundra? This, however, is the sort of information that we desire to print. It is quite familiar to some of our subscribers.

In closing what may be regarded as an epoch in the history of the *American Botanist*, we again suggest to subscribers who preserve their magazines that a complete file is worth much more than a partial set. There are only 91 sets in existence and only ten remain in stock. The back numbers are already scarce and will certainly continue to increase in value. At present the cost of a complete set of 32 volumes, unbound, is $32. We also have seven sets of vols. 1-22 at $15. These can be used to fill sets that began not later than 1917.

It is a deplorable fact that botanizing is not as popular as it once was, but all who read this are well aware of the pleasure to be derived from a study of plants and ought to welcome every opportunity to pass the pleasure along to others. It is suggested that a subscription to this magazine (at present rates) should prove a very acceptable Christmas gift to any person who loves flowers. We hope that a large number of our readers may spread the interest in botany by acting on this suggestion. It should be a source of much satisfaction to start others in so pleasant a field.

* * *

A writer in the British journal, *Nature*, says that the most striking thing about the young Americans of today is that they know nothing and have no ideas of their own. Then he adds "More books on natural history, botany and

country life are published every year in England than have been published in the United States since the *Mayflower* landed there." The writer fails to state whether he attributes our lack of ideas to a failure to study nature, but it is undoubtedly true that the British go in for gardening and botanizing to a greater extent than we do. They may make a virtue of necessity and take to the pursuit of natural history because the automobile is largely out of their reach, but it is surmised that an aptitude for plant study runs in the blood. One of the first qualifications of a good gardener is that he be English or Scotch.

* * *

What is the present generation doing to interest our youth in the science of plants—preparing a new generation to support and advance botany? It is teaching children in the secondary schools about plants, in winter, in an ordinary schoolroom, without plants except such as the teacher collects after school hours, or perhaps a few dead and pickled specimens. In possibly the majority of cases the teacher is not a botanist but merely a botany teacher, given the class because she happened to have time to teach it. As a result, what passes for instruction in botany is all too frequently recitations about plants, out of a book. The matter is perhaps of more importance than ever the botanists realize. Those who support botanical research are, in the main, those who are interested in plants—certainly those who carry on such researches are interested—but does anybody realize how few they really are? From the teaching profession comes the wail that we need a larger and better trained supply of science teachers, but the colleges and universities have not as yet, done much about it. We are still getting too many book-fed teachers; too many who have listened to some other man lecture;

too many who know only parts of a few standard types of plants; too many who have had merely an extended course in plant anatomy. In other walks of life, we go for information to the man who thoroughly understands his subject—but not the university. It goes after the men with the highest degrees. The matter of teaching ability takes a secondary place. And yet, it should be known by this time that the emphasis should be placed on a teacher who can make his subject attractive, who can inspire his students with a love of science, and who has an abundant first-hand knowledge of plants. Until educators insist that botany teachers be botanists, also, we cannot hope for a more general interest in the study of plants.

BOOKS AND WRITERS

We were down to the Mammoth Cave, recently. * * * The folders say the cave was discovered by a hunter who followed a bear to its *liar*. * * * The bears have disappeared but the liar is still in evidence. * * * You cannot tell from the advertising which cave is most attractive and so have to see them all. * * * And the country is as full of holes as a Swiss cheese. * * * The *Journal of Heredity* of Washington, D. C., is curious to know where the best honey-locust trees grow. * * * It is willing to spend real money to satisfy its curiosity and offers five prizes of $30, $20, $10, $5, and $3 for the best trees reported. * * * This makes it easy for somebody to be a prize-winner. * * * A well-known news-bureau in Washington informs its readers that the balm-of-Gilead belongs to the Dogwood Family. * * * We are inclined to think that if it does it has been adopted recently. * * * No less an authority than the clip-sheet of the National Department of Agriculture is out with an item on how to *peal* peaches. * * * This ought to be tried out on the bell-flower apple! * * * A magazine of nature-lore in Washington

speaks in a recent issue of the "Spicy tang of the pennyroyal, tansy and other *marsh* flowers." * * * Anybody who cannot see what is wrong with this picture, should write to the magazine about it. * * * It is the kind of misinformation that the exhuberant writers of "nature-articles" like to work into their stories. * * * Probably a recrudescence of "Washington science." * * * A recent book says that saffron is derived from the bulb of *Crocus sativus*. * * * Well, it isn't, but you will have to look it up to be sure, if you don't know! * * * The *Joemma Bulletin*, a Pacific Coast botanical publication dominated by the "potlach-bug," is no more. * * * Since the five gentlemen in Washington played into the hands of American bulb-growers with a narcissus quarantine, its editor has found it desirable to open several of the new gold-mines and his publication is now *Joe's Bulb Bulletin*. * * * Florists say that the domestic bulbs will not force as readily as those grown in foreign lands. * * * If the bulbs do not come up to expectations the prices doubtless will. * * * And now there is a narcissus quarantine on between the States. * * * When they finally put a ban on exchanging bulbs over the back fence, we are going back to raising onions! * * * *Torreya* claims to be the official organ of the Wildflower Preservation Society and the *Wildflower* announces itself as the national official organ of the same society. * * * Most people would be disposed to trade off one organ for a radio. * * * A little publication called *Cactography* reaches us from the home of the prickly specimens it describes. * * * The only copy we have seen is labelled "1926; Part 1." * * * It begins a list of all known cacti, with notes—and descriptions of unknown ones. * * * C. R. Orcutt, 1740 Fern St., San Diego, is the editor. * * * One genus included is named *Echinofossulocactus*. * * * Just imagine stepping on one like that! * * * Orcutt was long the editor of the *West American Scientist* and once brought

out a short-lived *American Botanist* that antedated the present publication. * * * J. Hutchinson, author of a recent volume on "The Families of Flowering Plants," has reprinted the Key to the families of the Dicotyledons. * * * It covers 54 pages. * * * Number 35 of a sheet marked "Information," issued by Ivy L. Lee and Associates, gives an extended account of the work of the Boyce Thompson Institute of Yonkers, N. Y. * * * A little folder on "California Desert Haunts," by Bruce W. McDaniel, tells where to find some extra-dry places on the Pacific Coast. * * * The Reviewer showed McDaniel his first desert but he has gone on investigating them until he knows all about them. * * * He is bringing out two new books on the subject, one entitled "The Desert" and the other "Dune and Desert Folk." * * * More about these later. * * * The "thou-shalt-not" boys down in Washington have thought up another good subject for a quarantine. * * * After October 1st you are forbidden to move the so-called "English" or black currant across State lines except in regions where pines with five needles in a bundle do not grow. * * * The white pine blister rust, which has its initial stages on the currant, is the excuse. * * * Meanwhile the European corn borer continues to enlarge its domain in spite of quarantines and embargoes. * * * Prohibition does not seem to work with the bugs and bacteria any better than it does with mere humans. * * * Wonder when the plant doctors are going to do something to the things that actually cause the diseases! * * * The barberry eradicators are now after the white snakeroot (*Eupatorium urticaefolium*). * * * This is the plant that used to be called *Eupatorium ageratoides* and is still offered by nurserymen under that name. * * * In some places it carries a disease of cattle known as "trembles" which can be transmitted to human beings where it is known as "milk-sickness." * * * Lincoln's mother died of "milk-sickness." * * * There are

literally billions of this plant in Illinois and various other near-by States. * * * Pulling it up ought to provide soft jobs for college boys for years to come. * * * Macmillan's as usual, announce several new botanical books for the fall and winter. * * * "The Spraying of Plants," "My Garden Comes of Age," "The Book of Bulbs" and several re-issues are included. * * * Mary Frances Baker's "Florida Wild-flowers," delayed since last spring, will appear in October. * * * The Schulze Baking Co., of Chicago, are wrapping a colored picture of different wildflowers with each loaf of bread. * ** Constantly adding to their knowledge of flo——, well, flours and flowers.

* * *

One of the minor annoyances of travel is one's inability to recognize the animals and plants along the route. Near home, an observant plant student can usually name the genera and make a good guess at the species when new plants are encountered, but farther afield the great changes likely to occur in the vegetation may reduce a good local botanist to the level of a tourist with no botany at all. This is especially true of a region such as California with a "Mediterranean" climate in which all sorts of tropical and semi-tropical plants may thrive, and a population active in introducing such things. So many plants from Japan, China, Australia, South Africa, and other lands have been brought in that even the native Californian, if such there be, is himself puzzled to name them. A recent book on the "Trees and Shrubs of California Gardens," therefore is likely to have a very cordial reception. The author, Charles Francis Saunders, is not one of California's "Native Sons" but he has lived in the region long enough to have become a step-son at least, while his early education along the Atlantic Coast has enabled him to view his species with something of the detached position of the tourist. Moreover, he has

avoided the form of the "How-to-know" books and writes as he might talk of the attractive features of his specimens. Best of all, without resorting to the jargon of the botanist, he has described a large number of the conspicuous woody plants in a way to enable the casual observer to recognize them. His chapters bear such titles as "Of Bottle-trees and Camphor," "Of the Casurina or Cassowary-tree," "Of Certain Palms and Some of Their Imitators," and "Of Certain Pines of the Waysides and Gardens." We should like just such a book for Florida and another for New Orleans and the Gulf Coast. The only thing we miss is a Key to the plants mentioned, so that after recognizing them, we can turn readily to the descriptions and read about them all over again. The book has 325 pages and nearly 40 illustrations from photographs. It is published by Robert M. McBride & Co., New York, at $3 net.

Among the vegetable products of the commercial world, there are a few of such outstanding importance as to be of interest to everybody. Rubber, tobacco, tea, opium, coffee, and various spices, drugs and dye-stuffs are included in this category, and the romance and adventure attending their exploitation have been very interestingly set forth by Donald Culross Peattie in his new book bearing the title of "Cargoes and Harvests." In his pages we find retold the amazing story of the mutiny on the British ship *Bounty* in the attempt to carry bread-fruit trees to the West Indies, of the discovery of the curative properties of quinine, of the search for the Chaulmoogra tree which bears the seeds that cure leprosy, of the spices of Ind., and so on through fifteen chapters that include rather full accounts of camphor, potato, cotton, and numerous others. At the end of each chapter is given a list of references for further study. A number of maps showing trade-routes and the regions where the plants grow add interest to the work. The book is pub-

lished by D. Appleton & Co., New York. The price is $2.50.

One no longer needs to travel up and down the earth for new phases of vegetation. Dr. Douglas H. Campbell has done all of this for him and set it down in an "Outline of Plant Geography" recently issued by the Macmillan Company of New York. His account is a vivid and comprehensive description of the physiographic regions of the earth and the plants that inhabit them. From a reading of this book, the student ought to get a very good idea of what the plants of other parts of the world look like. There are nearly four hundred pages of text. Fifty-two plates and more than a hundred other good illustrations add to the interest.

"The Life of Plants," a little book for beginners in botany by Sir Frederick Keeble, professor of botany in the University of Oxford, England, approaches the teaching of the subject in a somewhat different way. Beginning with a chapter on the plant's place in nature, the book next takes up food-making, discussing the source of the energy used, the distribution of food through the plant, and the use to which the food is put. Then follows an account of such subjects as transpiration, evolution, reproduction and heredity. While the substance of the book is essentially that of any beginning course, the view-point is fresh and the facts are presented in a logical sequence. The book will be of interest to American readers because it is cast in a new mold. There are more than fifty illustrations mostly from photographs. The book is one of the "Clarendon Science Series" under the editorship of Julian Huxley. It is published on this side of the globe by the Oxford University Press, American Branch, of New York, and costs $1.75.

Professor Marie-Victorin of the University of Montreal has written two of the recent "Contributions du Laboratoire

de Botanique l'Universite de Montreal." One, of 20 pages, discussed certain new, rare, or critical species of Eastern Quebec; the other entitled "Etudes floristiques sur la region du lac Saint-Jean" is the first of a proposed series of studies of various regions in the Province of Quebec. The present publication deals with the plants of the Lake St. John region at the headwaters of the Saguenay river. In preparation for his task the author has several times visited the region. He gives an annotated list of the species with many other notes on the botany. The book is bound in paper and contains 175 pages and 28 illustrations. The price is $1.00.

Right on the heels of Prof. John H. Schaffner's fourth edition of the "Key to the Families of Seed Plants" comes the third edition of his "Field Manual of the Trees." This latter is a most useful little book which runs to 154 pages and contains not only good descriptions of our trees, but four separate keys for their identification. The first is a key to the trees in the summer condition, another a key to the winter condition, a third keys the trees by means of their fruits and the fourth is a general key to the families and genera. There is also a classification of the wood of trees, and a useful glossary. In the section devoted to the classification and description of the trees, there are also keys to the species. The book is of a size to fit the pocket and should prove a desirable companion for the tree lover. It is published by R. G. Adams & Co., Columbus, Ohio. The price in cloth is $1.50.

A little booklet on the "Plants, Shrubs, and Trees of Northern Florida" by Nellie Irene Stevenson is designed as a guide to some of Florida's more conspicuous species. This is a revised edition of the author's "Florida Flowers." In a booklet of its size, it is impossible to pay attention to more than a fraction of the noticeable flowers of the State but in its forty pages are descriptions and notes of a popu-

lar character of seventy-five mostly woody species, which are sufficiently clear to enable the tourist to recognize them. To make this a certainty for visitors to Daytona, an itinerary about the city is given with the street and number at which representative species may be found. A similar plan for other Florida cities would doubtless be welcomed by visitors. The booklet is bound in paper and is for sale by the author at Fayette, Iowa.

Berrying does not consist chiefly in getting berries, any more than fishing consists chiefly in getting fish, or hunting in getting birds. The essence of berrying is the state of mind that accompanies it. It is a semi-contemplative recreation providing physical quiet with just enough motion to prevent restlessness, being in this respect like whittling. I said semi-contemplative, because, while it seems to induce meditation, the beauty of it is that you don't really meditate at all, you only think you are doing so or are going to. That is what makes it so recuperative in its effects. It just delicately shaves the line between, on the one hand, stimulating you to thought, and on the other to boring you because it does not stimulate: and thus it brings about in you a perfect state of poise, most restful in itself and in complete harmony with the mid-summer season.—*Anon.*

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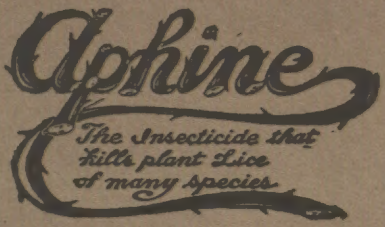

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